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The germ of syphilis (Spirochæta pallida) by dark field illumination in the secretions from a syphilitic wart (condyloma). The living spiral organism highly magnified. The bright circles are red blood cells. (See page 22.)

The
Third Great Plague

A Discussion of Syphilis for Everyday People

By

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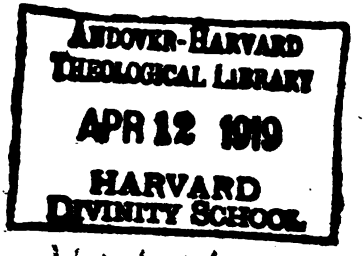

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PREFACE

THE struggle of man against his unseen and silent enemies, the lower or bacterial forms of life, once one becomes alive to it, has an irresistible fascination. More dramatic than any novel, more sombre and terrifying than a battle fought in the dark, would be the intimate picture of the battle of our bodies against the hosts of disease. If we could see with the eye of the microscope and feel and hear with the delicacy of chemical and physical interactions between atoms, the heat and intensity and the savage relentlessness of that battle would blot out all perception of anything but itself. Just as there are sounds we cannot hear, and light we cannot see, so there is a world of small things, living in us and around us, which sways our destiny and carries astray the best laid schemes of our wills and personalities. The gradual development of an awareness, a realization of the power of this world of minute things, has been the index of progress in the bodily well-being of the human race through the centuries marking the rebirth of medicine after the sleep of the Dark Ages.

In these days of sanitary measures and successful public health activity, it is becoming more and more difficult for us to realize the terrors of the Black Plagues, the devastation, greater and more frightful than war, which centuries ago swept over Europe and Asia time and again, scarcely leaving enough of the living to bury the dead. Cholera, smallpox, bubonic plague, with terrifying suddenness fell upon a world of ignorance, and each in turn humbled humanity to the dust before its invisible enemies.

Even within our own recollection, the germ of influenza, gaining a foothold inside our defenses, took the world by storm, and beginning probably at Hongkong, within the years 1889–90, swept the entire habitable earth, affecting hundreds of thousands of human beings, and leaving a long train of debilitating and even crippling complications.

Here and there through the various silent battles between human beings and bacteria there stand out heroic figures, men whose powers of mind and gifts of insight and observation have made them the generals in our fight against the armies of disease. But their gifts would have been wasted had they lacked the one essential aid without which leadership is futile. This is the force of enlightened public opinion, the backing of the every-day man. It is the coöperation of every-day men, acting on the organized knowledge of leaders, which has made possible the virtual extinction of the ancient scourges of smallpox, cholera, and bubonic plague.

Just as certain diseases are gradually passing into history through human effort, and the time is already in sight when malaria and yellow fever, the latest objects of attack, will disappear before the campaign of preventive medicine, so there are diseases, some of them ancient, others of more recent recognition, which are gradually being brought into the light of public understanding. Conspicuous among them is a group of three, which, in contrast to the spectacular course of great epidemics, pursue their work of destruction quietly, slowly undermining, in their long-drawn course, the very foundations of human life. Tuberculosis, or consumption, now the best known of the three, may perhaps be called the first of these great plagues, not because it is the oldest or the most wide-spread necessarily, but because it has been the longest known and most widely understood by the world at large. Cancer,

still of unknown cause, is the second great modern plague. The third great plague is syphilis, a disease which, in these times of public enlightenment, is still shrouded in obscurity, entrenched behind a barrier of silence, and armed, by our own ignorance and false shame, with a thousand times its actual power to destroy. Against all of these three great plagues medicine has pitted the choicest personalities, the highest attainments, and the uttermost resources of human knowledge. Against all of them it has made headway. It is one of the ironies, the paradoxes, of fate that the disease against which the most tremendous advances have been made, the most brilliant victories won, is the third great plague, syphilis—the disease that still destroys us through our ignorance or our refusal to know the truth.

We have crippled the power of tuberculosis through knowledge,—wide-spread, universal knowledge,—rather than through any miraculous discoveries other than that of the cause and the possibility of cure. We shall in time obliterate cancer by the same means. Make a disease a household word, and its power is gone. We are still far from that day with syphilis. The third great plague is just dawning upon us—a disease which in four centuries has already cost a whole inferno of human misery and a heaven of human happiness. When we awake, we shall in our turn destroy the destroyer—and the more swiftly because of the power now in the hands of medicine to blot out the disease. To the day of that awakening books like this are dedicated. The facts here presented are the common property of the medical profession, and it is impossible to claim originality for their substance. Almost every sentence is written under the shadow of some advance in knowledge which cost a life-time of some man's labor and self-sacrifice. The story of the conquest of syphilis is a fabric of great names, great thoughts,

dazzling visions, epochal achievements. It is romance triumphant, not the tissue of loathsomeness that common misconception makes it.

The purpose of this book is accordingly to put the accepted facts in such a form that they will the more readily become matters of common knowledge. By an appeal to those who can read the newspapers intelligently and remember a little of their high-school physiology, an immense body of interested citizens can be added to the forces of a modern campaign against the third great plague. For such an awakening of public opinion and such a movement for wider coöperation, the times are ready.

JOHN H. STOKES.

ROCHESTER, MINN.

CONTENTS

CHAPTER I

PAGE

THE HISTORY OF SYPHILIS 11

CHAPTER II

SYPHILIS AS A SOCIAL PROBLEM 15

CHAPTER III

THE NATURE AND COURSE OF SYPHILIS 21
The Prevalence of Syphilis 24
The Primary Stage 26

CHAPTER IV

THE NATURE AND COURSE OF SYPHILIS (*Continued*) 35
The Secondary Stage 35

CHAPTER V

THE NATURE AND COURSE OF SYPHILIS (*Continued*) 45
Late Syphilis (Tertiary Stage) 45

CHAPTER VI

THE BLOOD TEST FOR SYPHILIS 54

CHAPTER VII

THE TREATMENT OF SYPHILIS 60
General Considerations 60
Mercury 62

CHAPTER VIII

THE TREATMENT OF SYPHILIS (*Continued*) 70
Salvarsan 70

CHAPTER IX

THE CURE OF SYPHILIS 80

CHAPTER X

HEREDITARY SYPHILIS 92

CHAPTER XI PAGE

THE TRANSMISSION AND HYGIENE OF SYPHILIS 109

CHAPTER XII

THE TRANSMISSION AND HYGIENE OF SYPHILIS (*Continued*) 121
The Control of Infectiousness in Syphilis 121
Syphilis and Marriage 125

CHAPTER XIII

THE TRANSMISSION AND HYGIENE OF SYPHILIS (*Continued*) 133
Syphilis and Prostitution 133
Personal Hygiene of Syphilis 136

CHAPTER XIV

MENTAL ATTITUDES IN THEIR RELATION TO SYPHILIS 141

CHAPTER XV

MORAL AND PERSONAL PROPHYLAXIS 156

CHAPTER XVI

PUBLIC EFFORT AGAINST SYPHILIS 164

INDEX 187

The Third Great Plague

Chapter I

The History of Syphilis

Syphilis has a remarkable history,* about which it is worth while to say a few words. Many people think of the disease as at least as old as the Bible, and as having been one of the conditions included under the old idea of leprosy. Our growing knowledge of medical history, however, and the finding of new records of the disease, have shown this view to be in all probability a mistake. Syphilis was unknown in Europe until the return of Columbus and his sailors from America, and its progress over the civilized world can be traced step by step, or better, in leaps and bounds, from that date. It came from the island of Haiti, in which it was prevalent at the time the discoverers of America landed there, and the return of Columbus's infected sailors to Europe was the signal for a blasting epidemic, which in the sixteenth and seventeenth centuries devastated Spain, Italy, France, and England, and spread into India, Asia, China, and Japan.

It is a well-recognized fact that a disease which has never appeared among a people before, when it

* For a detailed account in English, see Pusey, W. A.: "Syphilis as a Modern Problem," Amer. Med. Assoc., 1915.

does attack them, spreads with terrifying rapidity and pursues a violent and destructive course on the new soil which they offer. This was the course of syphilis in Europe in the years immediately following the return of Columbus in 1493. Invading armies, always a fruitful means of spreading disease, carried syphilis with them everywhere and left it to rage unchecked among the natives when the armies themselves went down to destruction or defeat. Explorers and voyagers carried it with them into every corner of the earth, so that it is safe to say that in this year of grace 1917 there probably does not exist a single race or people upon whom syphilis has not set its mark. The disease, in four centuries, coming seemingly out of nowhere, has become inseparably woven into the problems of civilization, and is part and parcel of the concerns of every human being. The helpless fear caused by the violence of the disease in its earlier days, when the suddenness of its attack on an unprepared people paralyzed comprehension, has given place to knowledge such as we can scarcely duplicate for any of the other scourges of humanity. The disease has in its turn become more subtle and deceiving, its course is seldom marked by the bold and glaring destructiveness, the melting away of resistance, so familiar in its early history. The masses of sores, the literal falling to pieces of skeletons, are replaced by the inconspicuous but no less real deaths from heart and brain and other internal diseases, the losses to sight and hearing, the crippling and death of children, and all the insidious, quiet deterioration and degeneration of our fiber which syphilis brings about. From

devouring a man alive on the street, syphilis has taken to knifing him quietly in his bed.

Although syphilis sprang upon the world from ambush, so to speak, it did the world one great service—it aroused Medicine from the sleep of the Middle Ages. Many of the greatest names in the history of the art are inseparably associated with the progress of our knowledge of this disease. As Pusey points out, it required the force of something wholly unprecedented to take men away from tradition and the old stock in trade of ideas and formulas, and to make them grasp new things. Syphilis was the new thing of the time in the sixteenth century, and the study which it received went far toward putting us today in a position to control it. Before the beginning of the twentieth century almost all that ordinary observation of the diseased person could teach us was known of syphilis. It needed only laboratory study, such as has been given it during the past fifteen years, to put us where we could appeal to every intelligent man and woman to enlist in a brilliantly promising campaign. For a time syphilis was confused with gonorrhea, and there could be no better proof of the need for separating the two in our minds today than to study the way in which this confusion set back progress in our knowledge of syphilis. John Hunter, who fathered the idea of the identity of the two diseases, sacrificed his life to his idea indirectly. Ricord, a Frenchman, whose name deserves to be immortal, set Hunter's error right, and as the father of modern knowledge of syphilis, prepared us for the revolutionary advances of the last ten years.

There is something awe-inspiring in the quiet way in which one great victory has succeeded another in the battle against syphilis in the last decade. If we are out of the current of these things, in the office or the store, or in the field of industry and business, announcements from the great laboratories of the world seldom reach us, and when they do, they have an impractical sound, an unreality for us. So one hears, as if in a speaking-tube from a long distance, the words that Schaudinn and Hoffmann, on April 19, 1905, discovered the germ that causes syphilis, not realizing that the fact contained in those few brief words can alter the undercurrent of human history, and may, within the lives of our children and our children's children, remake the destiny of man on the earth. A great spirit lives in the work of men like Metchnikoff and Roux and Maisonneuve, who made possible the prophylaxis of syphilis, in that of Bordet and Wassermann, who devised the remarkable blood test for the disease, and in that of Ehrlich and Hata, who built up by a combination of chemical and biological reasoning, salvarsan, one of the most powerful weapons in existence against it. Ehrlich conceived the whole make-up and properties of salvarsan when most of us find it a hardship to pronounce its name. Schaudinn saw with the ordinary lenses of the microscope in the living, moving germ, what dozens can scarcely see today with the germ glued to the spot and with all the aid of stains and dark-field apparatus. After all, it is brain-power focused to a point that moves events, and to the immensity of that power the history of our growing knowledge of syphilis bears the richest testimony.

FRITZ SCHAUDINN
[1871–1906]

(From the "Galerie hervorragender Aerzte und Naturforscher." Supplement to the Münchener med. Wochenschrift, 1906. J. F. Lehmann, Munich.)

Chapter II

Syphilis as a Social Problem

The simple device of talking plain, matter-of-fact English about a thing has a value that we are growing to appreciate more and more every day. It is only too easy for an undercurrent of ill to make headway under cover of a false name, a false silence, or misleading speech. The fact that syphilis is a disease spread to a considerable extent by sexual relations too often forces us into an attitude of veiled insinuation about it, a mistaken delicacy which easily becomes prudish and insincere. It is a direct move in favor of vulgar thinking to misname anything which involves the intimacies of life, or to do other than look it squarely in the eye, when necessity demands, without shuffling or equivocation. On this principle it is worth while to meet the problem of a disease like syphilis with an open countenance and straightforward honesty of expression. It puts firm ground under our feet to talk about it in the impersonal way in which we talk about colds and pneumonia and bunions and rheumatism, as unfortunate, but not necessarily indecent, facts in human experience. Nothing in the past has done so much for the campaign against consumption as the unloosing of tongues. There is only one way to understand syphilis, and that is to give it impartial, discriminating discussion as an issue which concerns the

general health. To color it up and hang it in a gallery of horrors, or to befog it with verbal turnings and twistings, are equally serious mistakes. The simple facts of syphilis can appeal to intelligent men and women as worthy of their most serious attention, without either stunning or disgusting them. It is in the unpretentious spirit of talking about a spade as a spade, and not as "an agricultural implement for the trituration of the soil," that we should take stock of the situation and of the resources we can muster to meet it.

The Confusion of the Problem of Syphilis with Other Issues.—Two points in our approach to the problem of syphilis are important at the outset. The first of these is to separate our thought about syphilis from that of the other two diseases, gonorrhea, or "clap," and chancroids, or "soft sores," which are conventionally linked with it under the label of "venereal diseases."* The second is to sepa-

* The three so-called venereal diseases are syphilis, gonorrhea, and chancroid or soft ulcer. Gonorrhea is the commonest of the three, and is an exceedingly prevalent disease. In man its first symptom is a discharge of pus from the canal through which the urine passes. Its later stages may involve the bladder, the testicles, and other important glands. It may also produce crippling forms of rheumatism, and affect the heart. Gonorrhea may recur, become latent, and persist for years, doing slow, insidious damage. It is transmitted largely by sexual intercourse. Gonorrhea in women is frequently a serious and even fatal disease. It usually renders women incapable of having children, and its treatment necessitates often the most serious operations. Gonorrhea of the eyes, affecting especially newborn children, is one of the principal causes of blindness. Gonorrhea may be transmitted to little girls innocently from infected toilet seats, and is all but incurable. Gonorrhea, wherever it occurs, is an obstinate, treacherous, and resistant disease, one of the most serious of modern medical problems, and fully deserves a place as the fourth great plague.

Chancroid is an infectious ulcer of the genitals, local in character, not affecting the body as a whole, but sometimes destroying considerable portions of the parts involved.

rate the question of syphilis at least temporarily from our thought about morals, from the problem of prostitution, from the question as to whether continence is possible or desirable, whether a man should be true to one woman, whether women should be the victims of a double standard, and all the other complicated issues which we must in time confront. Such a picking to pieces of the tangle is simply the method of scientific thought, and in this case, at least, has the advantage of making it possible to begin to do something, rather than saw the air with vain discussion.

Let us think of syphilis, then, as a serious but by no means hopeless constitutional disease. Dismiss chancroid as a relatively insignificant local affair, seldom a serious problem under a physician's care. Separate syphilis from gonorrhea for the reason that gonorrhea is a problem in itself. Against its train of misfortune to innocence and guilt alike, we are as yet not nearly so well equipped to secure results. Against syphilis, the astonishing progress of our knowledge in the past ten years has armed us for triumph. When the fight against tuberculosis was brought to public attention, we were not half so well equipped to down the disease as we are today to down syphilis. For syphilis we now have reliable and practical methods of prevention, which have already proved their worth. The most powerful and efficient of drugs is available for the cure of the disease in its earlier stages, and early recognition is made possible by methods whose reliability is among the remarkable achievements of medicine. It is the

sound opinion of conservative men that if the knowledge now in the hands of the medical profession could be put to wide-spread use, syphilis would dwindle in two generations from the unenviable position of the third great plague to the insignificance of malaria and yellow fever on the Isthmus of Panama. The influences that stand between humanity and this achievement are the lack of general public enlightenment on the disease itself, and public confusion of the problem with other sex issues for which no such clean-cut, satisfactory solution has been found. Think of syphilis as the wages of sin, as well-earned disgrace, as filth, as the badge of immorality, as a necessary defense against the loathesomeness of promiscuity, as a fearful warning against prostitution, and our advantage slips from us. The disease continues to spread wholesale disaster and degeneration while we wrangle over issues that were old when history began and are progressing with desperate slowness to a solution probably many centuries distant. Think of syphilis as a medical and a sanitary problem, and its last line of defense crumbles before our attack. It can and should be blotted out.

Syphilis, a Problem of Public Health Rather than of Morals.—Nothing that can be said about syphilis need make us forget the importance of moral issues. The fact which so persistently distorts our point of view, that it is so largely associated with our sexual life, is probably a mere incident, biologically speaking, due in no small part to the almost absurdly simple circumstance that the germ of the disease cannot grow in the presence of air, and must there-

fore find refuge, in most cases, in the cavities and inlets from the surface of the body. History affords little support to the lingering belief that if syphilis is done away with, licentiousness will overrun the world. Long before syphilis appeared in Europe there was sexual immorality. In the five centuries in which it has had free play over the civilized world, the most optimistic cannot successfully maintain that it has materially bettered conditions or acted as a check on loose morals, though its relation to sexual intercourse has been known. As a morals policeman, syphilis can be obliterated without material loss to the cause of sexual self-restraint, and with nothing but gain to the human race.

It is easier to accept this point of view, that the stamping out of syphilis will not affect our ability to grapple with moral problems, and that there is nothing to be gained by refusing to do what can so easily be done, when we appreciate the immense amount of innocent suffering for which the disease is responsible. It must appeal to many as a bigoted and narrow virtue, little better than vice itself, which can derive any consolation in the thought that the sins of the fathers are being visited upon the children, as it watches a half-blind, groping child feel its way along a wall with one hand while it shields its face from the sunlight with the other. There are better ways of paying the wages of sin than this. Best of all, we can attack a sin at its source instead of at its fulfilment. How much better to have kept the mother free from syphilis by giving the father the benefit of our knowledge. The child who reaped his

sowing gained nothing morally, and lost its physical heritage. Its mother lost her health and perhaps her self-respect. Neither one contributes anything through syphilis to the uplifting of the race. They are so much dead loss. To teach us to avoid such losses is the legitimate field of preventive medicine.

On this simplified and practical basis, then, the remainder of this discussion will proceed. Syphilis is a preventable disease, usually curable when handled in time, and its successful management will depend in large part upon the coöperation, not only of those who are victims of it, but of those who are not. It is much more controllable than tuberculosis, against which we are waging a war of increasing effectiveness, and its stamping out will rid humanity of an even greater curse. To know about syphilis is in no sense incompatible with clean living or thinking, and insofar as its removal from the world will rid us of a revolting scourge, it may even actually favor the solution of the moral problems which it now obscures.

Chapter III

The Nature and Course of Syphilis

The simplest and most direct definition of syphilis is that it is a contagious constitutional disease, due to a germ, running a prolonged course, and at one time or another in that course is capable of affecting nearly every part of the body. One of the most important parts of this rather abstract statement is that which relates to the germ. To be able to put one's finger so definitely on the cause of syphilis is an advantage which cannot be overestimated. More than in almost any other disease the identification of syphilis at its very outset depends upon the seeing of the germ that causes it in the discharge from the sore or pimple which is the first evidence of syphilis on the body. On our ability to recognize the disease as syphilis in the first few days of its course depends the greatest hope of cure. On the recognition of the germ in the tissues and fluids of the body has depended our knowledge of the real extent and ravages of the disease. With the knowledge that the germ was related to certain other more familiar forms, Ehrlich set the trap for it that culminated in salvarsan, or "606," the powerful drug used in the modern treatment. By the finding of this same germ in the nervous system in locomotor ataxia and general

paralysis of the insane, the last lingering doubt of their syphilitic character was dispelled. Every day and hour the man who deals with syphilis in accordance with the best modern practice brings to bear knowledge that arises from our knowledge of the germ cause of syphilis. No single fact except perhaps the knowledge that certain animals (monkeys and rabbits especially) could be infected with it has been of such immense practical utility in developing our power to deal with it.

The germ of syphilis,* discovered by Schaudinn and Hoffmann in 1905, is an extremely minute spiral or corkscrew-shaped filament, visible under only the highest powers of the microscope, which increase the area of the object looked at hundreds of thousands of times, and sometimes more than a million of times. Even under such intense magnifications, it can be seen only with great difficulty, since it is colorless in life, and it is hard to color or stain it with dyes. Its spiral form and faint staining have led to its being called the *Spirochæta pallida.*† It is best seen by the use of a special device, called a dark-field illuminator, which shows the germ, like a floating particle in a sunbeam, as a brilliant white spiral against a black background, floating and moving in the secretions taken from the sore in which it is found. Some means of showing the germ should be in the hands of every physician, hospital, or dispensary which makes a claim to recognize and treat syphilis.

Syphilis a Concealed Disease.—Syphilis is not a grossly conspicuous figure in our every-day life, as

* See frontispiece.

† Pronounced spi-ro-kee'-ta.

leprosy was in the life of the Middle Ages, for example. To the casually minded, therefore, it is not at all unreasonable to ask why there should be so much agitation about it when so little of it is in evidence. It takes a good deal out of the graphic quality of the thing to say that most syphilis is concealed, that most syphilitics, during a long period of their disease, are socially presentable. Of course, when we hear that they may serve lunch to us, collect our carfare, manicure our nails, dance with us most enchantingly, or eat at our tables, it seems a little more real, but still a little too much to believe. Conviction seems to require that we see the damaged goods, the scars, the sores, the eaten bones, the hobbling cripples, the maimed, the halt, and the blind. There is no accurate estimate of its prevalence based on a census, because, as will appear later, even an actual impulse to self-betrayal would not disclose 30 to 40 per cent of the victims of the disease. Approximately this percentage would either have forgotten the trivial beginnings of it, or with the germs of it still in their brains or the walls of their arteries or other out-of-the-way corners of their bodies, would think themselves free of the disease—long since "cured" and out of danger.

How Much Syphilis is There?—Our entire lack of a tangible idea of how much syphilis there really is among us is, of course, due to the absence of any form of registration or reporting of the disease to authorities such as health officers, whose duty it is to collect such statistics, and forms the principal argument in favor of dealing with syphilis legally as a contagious

disease. Such conceptions of its prevalence as we have are based on individual opinions and data collected by men of large experience.

Earlier Estimates of the Prevalence of Syphilis.—It is generally conceded that there is more syphilis among men than women, although it should not be forgotten that low figures in women may be due to some extent to the milder and less outspoken course of the disease in them. Five times more syphilis in men than women conservatively summarizes our present conceptions. The importance of distinguishing between syphilis among the sick and among the well is often overlooked. For example, Landouzy, in the Laënnec clinic in Paris, estimated recently that in the patients of this clinic, which deals with general medicine, 15 to 18 per cent of the women and 21 to 28 per cent of the men had syphilis. It is fair to presume, then, that such a percentage would be rather high for the general run of every-day people. This accords with the estimates, based on large experience, of such men as Lenoir and Fournier, that 13 to 15 per cent of all adult males in Paris have syphilis. Erb estimated 12 per cent for Berlin, and other estimates give 12 per cent for London. Collie's survey of British working men gives 9.2 per cent in those who, in spite of having passed a general health examination, showed the disease by a blood test. A large body of figures, covering thirty years, and dating back beyond the time when the most sensitive tests of the disease came into use, gives about 8 per cent of more than a million patients in the United States Public Health and Marine Hospital Service

as having syphilis. It should be recalled that this includes essentially active rather than quiescent cases, and is therefore probably too low.

Current Estimates of the Prevalence of Syphilis.—The constant upward tendency of recent estimates of the amount of syphilis in the general population, as a result of the application of tests which will detect even concealed or quiescent cases, is a matter for grave thought. The opinion of such an authority as Blaschko, while apparently extreme, cannot be too lightly dismissed, when he rates the percentage of syphilitics in clerks and merchants in Berlin between the ages of 18 and 28 as 45 per cent. Pinkus estimated that one man in five in Germany has had syphilis. Recently published data by Vedder, covering the condition of recruits drawn to the army from country and city populations, estimate 20 per cent syphilitics among young men who apply for enlistment, and 5 per cent among the type of young men who enter West Point and our colleges. It can be pointed out also with justice that the percentage of syphilis in any class grouped by age increases with the age, since so few of the cases are cured, and the number is simply added to up to a certain point as time elapses. Even the army, which represents in many ways a filtered group of men, passing a rigorous examination, and protected by an elaborate system of preventions which probably keeps the infection rate below that of the civil population, is conceded by careful observers (Nichols and others) to show from 5 to 7 per cent syphilitics. Attention should be called to the difference between the per-

centage of syphilis in a population and the percentage of venereal disease. The inclusion of gonorrhea with syphilis increases the percentages enormously, since it is not infrequently estimated that as high as 70 per cent of adult males have gonorrhea at least once in a lifetime.

On the whole, then, it is conservative to estimate that one man in ten has syphilis. Taking men and women together on the basis of one of the latter to five of the former, and excluding those under fifteen years of age from consideration, this country, with a population of 91,972,266,* should be able to muster a very considerable army of 3,842,526, whose influence can give a little appreciated but very undesirable degree of hyphenation to our American public health. In taking stock of ourselves for the future, and in all movements for national solidarity, efficiency, and defense, we must reckon this force of syphilo-Americans among our debits.

The Primary Stage of Syphilis

The So-called Stages of Syphilis.—The division of the course of syphilis into definite stages is an older and more arbitrary conception than the one now developing, and was based on outward signs of the disease rather than on a real understanding of what goes on in the body during these periods. The primary stage was supposed to extend from the appearance of the first sore or chancre to the time when an eruption appeared over the whole body. Since the discovery of the Spirochæta pallida, the germ of the disease, our knowledge of what the germ does in

* Figures based on 1910 census.

the body, where it goes, and what influence it has upon the infected individual, has rapidly extended. We now appreciate much more fully than formerly that at the very beginning of the disease there is a time when it is almost purely local, confined to the first sore itself, and perhaps to the glands or kernels in its immediate neighborhood. Thorough and prompt treatment with the new and powerful aid of salvarsan ("606") at this stage of the disease can kill all the germs and prevent the disease from getting a foothold in the body which only years of treatment subsequently can break. This is the critical moment of syphilis for the individual and for society, and its importance and the value of treatment at this time cannot be too widely understood.

Peculiarities of the Germ.—Many interesting facts about the Spirochæta pallida explain peculiarities in the disease of which it is the cause. Many germs can be grown artificially, some in the presence of air, others only when air is removed. The germ of syphilis belongs in the latter class. The germ that causes tuberculosis, a rod-like organism or bacillus, can stand drying without losing its power to produce the disease, and has a very appreciable ability to resist antiseptic agents. If the germ of syphilis were equally hard to kill, syphilis would be an almost universal disease. Fortunately it dies at once on drying, and is easily destroyed by the weaker antiseptics provided it has not gained a foothold on favorable ground. Its inability to live long in the presence of air confines the source of infection largely to those parts of the body which are moist and pro-

tected, and especially to secretions and discharges which contain it. Its contagiousness is, therefore, more readily controlled than that of tuberculosis. It is impossible for a syphilitic to leave a room or a house infected for the next occupants, and it is not necessary to do more than disinfect objects that come in contact with open lesions or their secretions, to prevent its spread by indirect means. Such details will be considered more fully under the transmission and hygiene of the disease.

Mode of Entry of the Germ.—The germ of the disease probably gains entrance to the body through a break or abrasion in the skin or the moist red mucous surfaces of the body, such as those which line the mouth and the genital tract. The break in the surface need not be visible as a chafe or scratch, but may be microscopic in size, so that the first sore seems to develop on what is, to all appearances, healthy surface. It should not be forgotten that this surface need not be confined to the genital organs, since syphilis may and often does begin at any part of the body where the germ finds favorable conditions for growth.

Incubation or Quiescent Period.—Almost all germ diseases have what is called a period of incubation, in which the germ, after it has gained entrance to the body, multiplies with varying rapidity until the conditions are such that the body begins to show signs of the injury which their presence is causing. The germ of syphilis is no exception to this rule. Its entry into the body is followed by a period in which there is no external sign of its presence to warn the

infected person of what is coming. This period of quiescence between the moment of infection with syphilis and the appearance of the first signs of the disease in the form of the chancre may vary from a week to six weeks or even two months or more, with an average of about two or three weeks.

In the length of the incubation period and the comparatively trifling character of the early signs, the germ of syphilis betrays one of its most dangerous characteristics. The germ of pneumonia, for example, may be present on the surface of the body, in the mouth or elsewhere, for a long time, but the moment it gets a real foothold, there is an immediate and severe reaction, the body puts up a fight, and in ten days or so has either lost or won. The germ of syphilis, on the other hand, secures its place in the body without exciting very strenuous or wide-spread opposition. The body does not come to its own defense so well as with a more active enemy. The fitness of the germ of syphilis for long-continued life in the body, and the difficulty of marshaling a sufficient defense against it, is what makes it impossible to cure the disease by any short and easy method.

The First Sore or Chancre.—The primary lesion, first sore or chancre,* is the earliest sign of reaction which the body makes to the presence of the growing germs of syphilis. This always develops at the point where the germs entered the body. The incubation period ends with the appearance of a small hard knot or lump under the skin, which may remain

* Pronounced shan'-ker.

any slipshod or guesswork means. To secure the benefit of modern methods for the early recognition of syphilis those who expose themselves, or are exposed knowingly, to the risk of getting the disease by any of the commoner sources of infection, should seek expert medical advice at once on the appearance of anything out of the ordinary, no matter how trivial, on the parts exposed. The commoner sources of infection may be taken to be the kissing of strangers, the careless use of common personal and toilet articles which come in contact with the mouth especially,—all of which are explained later,—and illicit sexual relations. While this by no means includes all the means for the transmission of the disease, those who do these things are in direct danger, and should be warned accordingly.

Modern Methods of Identifying an Early Syphilitic Infection.—The practice of tampering with sores, chafes, etc., which are open to suspicion, whether done by the patient himself or by the doctor before reaching a decision as to the nature of the trouble, is unwise. An attempt to "burn it out" with caustic or otherwise, which is the first impulse of the layman with a half-way knowledge and even of some doctors, promptly makes impossible a real decision as to whether or not syphilis is present. Even a salve, a wash, or a powder may spoil the best efforts to find out what the matter is. A patient seeking advice should go to his doctor *at once*, and absolutely *untreated*. Then, again, irritating treatment applied unwisely to even a harmless sore may make a mere chafe look like a hard chancre, and result in the pa-

tient's being treated for months or longer for syphilis. Nowadays our first effort after studying the appearance of the suspected lesion is to try to find the germs, with the dark-field microscope or a stain. Having found them, the question is largely settled, although we also take a blood test. If we fail to find the germs, it is no proof that syphilis is absent, and we reëxamine and take blood tests at intervals for some months to come, to be sure that the infection has not escaped our vigilance, as it sometimes does if we relax our precautions. In recognizing syphilis, the wise layman is the one who knows he does not know. The clever one who is familiar with everything "they say" about the disease, and has read about the matter in medical books into the bargain, is the best sort of target for trouble. Such men are about as well armed as the man who attacks a lion with a toothpick. He may stop him with his eye, but it is a safer bet he will be eaten.

Enlargement of Neighboring Glands.—Nearly every one is familiar with the kernels or knots that can be felt in the neck, often after tonsillitis, or with eruptions in the scalp. These are lymph-glands, which are numerous in different parts of the body, and their duty is, among other things, to help fight off any infection which tries to get beyond the point at which it started. The lymph-glands in the neighborhood of the chancre, on whatever part of the body it is situated, take an early part in the fight against syphilis. If, for example, the chancre is on the genitals, the glands in the groin will be the first ones affected. If it is on the lip, the neck glands become

swollen. The affected glands actually contain the germs which have made their way to them through lymph channels under the skin. When the glands begin to swell, the critical period of limitation of the disease to the starting-point will soon be over and the last chances for a quick cure will soon be gone. At any moment they may gain entrance to the blood stream in large numbers. While the swelling of these glands occurs in other conditions, there are peculiarities about their enlargement which the physician looking for signs of the disease may recognize. Especially in case of a doubtful lesion about the neck or face, when a bunch of large swollen glands develops under the jaw in the course of a few days or a couple of weeks, the question of syphilis should be thoroughly investigated.

Vital Significance of Early Recognition.—The critical period of localization of an early infection will be brought up again in subsequent pages. As Pusey says, it is the "golden opportunity" of syphilis. It seldom lasts more than two weeks from the first appearance of the primary sore or chancre, and its duration is more often only a matter of four or five days before the disease is in the blood, the blood test becomes positive, and the prospect of what we call abortive cure is past. Nothing can justify or make up for delay in identifying the trouble in this early period, and the person who does not take the matter seriously often pays the price of his indifference many times over.

Chapter IV

The Nature and Course of Syphilis (Continued)

The Secondary Stage

The Spread of the Germs Over the Body.—The secondary stage of syphilis, like the primary stage, is an arbitrary division whose beginning and ending can scarcely be sharply defined. Broadly speaking, the secondary stage of syphilis is the one in which the infection ceases to be confined to the neighborhood of the chancre and affects the entire body. The spread of the germs of the disease to the lymph-glands in the neighborhood of the primary sore is followed by their invasion of the blood itself. While this may begin some time before the body shows signs of it, the serious outburst usually occurs suddenly in the course of a few days, and fills the circulating blood with the little corkscrew filaments, sending showers of them to every corner of the body and involving every organ and tissue to a greater or less extent. This explosion marks the beginning of the active secondary stage of syphilis. The germs are now everywhere, and the effect on the patient begins to suggest such infectious diseases as measles, chickenpox, etc., which are associated with eruptions on the skin. But there can be no more serious mistake than to suppose that the eruptions which usually

break out on the skin at this time represent the whole, or even a very important part, of the story. They may be the most conspicuous sign to the patient and to others, but the changes which are to affect the future of the syphilitic are going on just at this time, not in his skin, but in his internal organs, and especially in his heart and blood-vessels and in his nervous system.

Constitutional Symptoms.—It is surprising how mild a thing secondary syphilis is in many persons. A considerable proportion experience little or nothing at this time in the way of disturbances of the general health to suggest that they have a serious illness. A fair percentage of them lose 5 or 10 pounds in weight, have severe or mild headaches, usually worse at night, with pains in the bones and joints that may suggest rheumatism. Nervous disturbances of the most varied character may appear. Painful points on the bones or skull may develop, and there may be serious disturbances of eye-sight and hearing. A few are severely ill, lose a great deal of weight, endure excruciating pains, pass sleepless nights, and suffer with symptoms suggesting that their nervous systems have been profoundly affected. As a general thing, however, the constitutional symptoms are mild compared with those of the severe infectious fevers, such as typhoid or malaria.

The Secondary Eruption or Rash.—The eruption of secondary syphilis is generally the feature which most alarms the average patient. It is usually rather abundant, in keeping with the wide-spread character of the infection, and is especially notice-

able on the chest and abdomen, the face, palms, and soles. It is apt to appear in the scalp in the severer forms. The eruption may consist of almost anything, from faint pink spots to small lumps and nodules, pimples and pustules, or large ulcerating or crusted sores. The eruption is not necessarily conspicuous, and may be entirely overlooked by the patient himself, or it may be so disfiguring as to attract attention.

Common Misconceptions Regarding Syphilitic Rashes.—Laymen should be warned against the temptation to call an eruption syphilitic. The commonest error is for the ordinary person to mistake a severe case of acne, the common "pimples" of early manhood, for syphilis. Psoriasis, another harmless, non-contagious, and very common skin disease, is often mistaken for syphilis. Gross injustice and often much mental distress are inflicted on unfortunates who have some skin trouble by the readiness with which persons who know nothing about the matter insist on thinking that any conspicuous eruption is syphilis, and telling others about it. Even with an eye trained to recognize such things on sight, in the crowds of a large city, one very seldom sees any skin condition which even suggests syphilis. It usually requires more than a passing glance at the whole body to identify the disease. If, under such circumstances, one becomes concerned for the health of a friend, he would much better frankly ask what is the matter, than make him the victim of a layman's speculations. It is always well to remember that profuse eruptions of a conspicuous nature,

which have been present for months or years, are less likely to be syphilitic.

The Contagious Sores in the Mouth, Throat, and Genitals.—Accompanying the outbreaks of syphilis on the skin, in the secondary period, a soreness may appear in the mouth and throat, and peculiar patches seen on the tongue and lips, and flat growths be noticed around the moist surfaces, such as those of the genitals. These throat, mouth, and genital eruptions are the most dangerous signs of the disease from the standpoint of contagiousness. Just as the chancre swarms with the germs of syphilis, so every secondary spot, pimple, and lump contains them in enormous numbers. But so long as the skin is not broken or rubbed off over them, they are securely shut in. There is no danger of infection from the dry, unbroken skin, even over the eruption itself. But in the mouth and throat and about the genitals, where the surface is moist and thin, the covering quickly rubs or dissolves off, leaving the gray or pinkish patches and the flattened raised growths from which the germs escape in immense numbers and in the most active condition. Such patches may occur under the breasts and in the armpits, as well as in the places mentioned. The saliva of a person in this condition may be filled with the germs, and the person have only to cough in one's face to make one a target for them.

Distribution of the Germs in the Body.—The germs of syphilis have in the past few years been found in every part of the body and in every lesion of syphilis. While the secondary stage is at its

height, they are in the blood in considerable numbers, so that the blood may at these times be infectious to a slight degree. They are present, of course, in large numbers in the secretions from open sores and under the skin in closed sores. The nervous system, the walls of the blood-vessels, the internal organs, such as the liver and spleen, the bones and the bone-marrow, contain them. They are not, however, apparently found in the secretions of the sweat glands, but, on the other hand, they have been shown to be present in the breast milk of nursing mothers who have active syphilis. The seminal fluid may contain the germs, but they have not been shown to be present either in the egg cells of the female or in the sperm cells of the male.

Fate of the Germs.—The fate of all these vast numbers of syphilitic germs, distributed over the whole body at the height of the disease, is one of the most remarkable imaginable. As the acute secondary stage passes, whether the patient is treated or not, by far the larger number of the spirochetes in the body is destroyed by the body's own power of resistance. This explains the statement, that cannot be too often repeated, that the outward evidences of secondary syphilis tend to disappear of themselves, whether or not the patient is treated. Of the hordes of germs present in the beginning of the trouble, only a few persist until the later stages, scattered about in the parts which were subject to the overwhelming invasion. Yet because of some change which the disease brought about in the parts thus affected, these few germs are able to produce much

more dangerous changes than the armies which preceded them. In some way the body has become sensitive to them, and a handful of them in course of time are able to do damage which billions could not earlier in the disease. The man in whom the few remaining germs are confined largely to the skin is fortunate. The unfortunates are those who, with the spirochetes in their artery walls, heart muscle, brain, and spinal cord, develop the destructive arterial and nervous changes which lead to the crippling of life at its root and premature death.

Variations in the Behavior of the Germ of Syphilis.—Differences in the behavior of the same germ in different people are very familiar in medicine and are of importance in syphilis. As an example, the germ of pneumonia may be responsible for a trifling cold in one person, for an attack of grippe in the next, and may hurry the next person out of the world within forty-eight hours with pneumonia. Part of this difference in the behavior of a given germ may be due to differences among the various strains or families of germs in the same general group. Another part is due to the habit which germs have, of singling out for attack the weakest spot in a person's body. The germ that causes rheumatism has strains which produce simply tonsillitis, and others which, instead of attacking joints, tend to attack the valves of the heart. Our recent knowledge suggests that somewhat the same thing is at work in syphilis. Certain strains of Spirochæta pallida tend to thrive in the nervous system, others perhaps in the skin. On the other hand, in certain persons, for example,

heavy drinkers, the nervous system is most open to attack, in others the bones may be most affected, in still others, the skin.

Variations in the Course of Syphilis in Different Persons.—So it comes about that in the secondary stage there may be wide differences in the amount and the location of the damage done by syphilis. One patient may have a violent eruption, and very little else. Another will scarcely show an outward sign of the disease and yet will be riddled by one destructive internal change after another. In such a case the secondary stage of the disease may pass with half a dozen red spots on the body and no constitutional symptoms, and the patient go to pieces a few years later with locomotor ataxia or general paralysis of the insane. On the other hand, a patient may have a stormy time in the secondary period and have abundant reason to realize he has syphilis, and under only moderate treatment recover entirely. Still another will have a bad infection from the start, and run a severe course in spite of good treatment, to end in an early wreck. The last type is fortunately not common, but the first type is entirely too abundant. It cannot be said too forcibly that in the secondary as in the primary stage, syphilis may entirely escape the notice of the infected person, and he may not realize what ails him until years after it is too late to do anything for him. Here, as in the primary stage, the lucky person is the one who shows his condition so plainly that he cannot overlook it, and who has an opportunity to realize the seriousness of his disease. It used to be an old

rule not to treat people who seemed careless and indifferent until their secondary eruption appeared, in the hope that this flare-up would bring them to their senses. The necessity for such a rule shows plainly how serious a matter a mild early syphilis may be.

The Dangerous Contagious Relapses.—Secondary syphilis does not begin like a race, at the drop of a hat, or end with the breaking of a tape. When the first outburst has subsided, a series of lesser outbreaks, often covering a series of years, may follow. These minor relapses or recurrences are mainly what make the syphilitic a danger to his fellows. They are to a large extent preventable by thorough modern treatment. Few people are so reckless as wholly to disregard precautions when the severe outburst is on. But the lesser outbreaks, if they occur on the skin, attract little or no attention or are entirely misunderstood by the patient. Only too often they occur as the flat, grayish patches in the mouth and genital tract, such as are seen in the secondary stage, where, because they are out of sight and not painful, they pass unnoticed. The tonsils, the under side and edges of the tongue, and the angles of the mouth just inside the lips are favorite places for these recurrent mucous patches. They are thus ideally placed to spread infection, for, as in the secondary stage, each of these grayish patches swarms with the germs of syphilis. Similar recurrences about the genitals often grow, because of the moisture, into buttons and flat, cauliflower-like warts from which millions of the germs can be squeezed. Sometimes

they are mistaken for hemorrhoids or "piles." With all the opportunities that these sores offer for infection, it is surprising that the disease is not universal. Irritation from friction, dirt, and discharges, and in the mouth the use of tobacco, are the principal influences acting to encourage these recurrences.

Relapses in the Nervous System and Elsewhere.—Mucous patches are, of course, not the only recurrences, though they are very common. At any time a little patch of secondary eruption may appear and disappear in the course of a short time. Recurrences are not confined to the skin, and those which take place in the nervous system may result in temporary or permanent paralysis of important nerves, including those of the eyes and ears. Again, recurrences may show themselves in the form of a general running down of the patient from time to time, with loss of weight and general symptoms like those of the active secondary period.

The secondary period as a whole is not in itself the serious stage of syphilis. Most of the symptoms are easily controlled by treatment if they are recognized. Now and then instances of serious damage to sight, hearing, or important organs elsewhere occur, but these are relatively few in spite of the enormous numbers and wide distribution of the germs. Accordingly, the problems that the secondary stage offers the physician and society at large must center around the recognition of mild and obscure cases and adequate treatment for all cases. The identification of the former is vital because of the recurrence of extremely infectious periods throughout

this stage of the disease, and the latter is essential because vigorous treatment, carried out for a long enough time, prevents not only the late complications which destroy the syphilitic himself, but does away with the menace to society that arises through his infecting others, whether in marriage and sexual contact or in the less intimate relations of life.

Chapter V

The Nature and Course of Syphilis (Continued)

Late Syphilis (Tertiary Stage)

The Seriousness of Late Syphilis.—While we recognize a group of symptoms in syphilis which we call late or tertiary, there is no definite or sharp boundary of time separating secondary from tertiary periods. The man who calculates that he will have had his fling in the ten or twenty years before tertiary troubles appear may be astonished to find that he can develop tertiary complications in his brain almost before he is well rid of his chancre. "Late accidents," as we call them, are the serious complications of syphilis. They are, as has been said, brought about by relatively few germs, the left-overs from the flooding of the body during the secondary period. There is still a good deal of uncertainty as to just what the distribution of the germs which takes place in the secondary period foreshadows in the way of prospects for trouble when we come to the tertiary period. It may well be that the man who had many germs in his skin and a blazing eruption when he was in the second stage, may have all his trouble in the skin when he comes to the late stage. It is the verdict of experience, however, that people who have never noticed their secondary eruption because it was so mild are more likely to be affected in the ner-

vous system later on. But this may be merely because the condition, being unrecognized, escapes treatment. It is at least safe to say that those whose skins are the most affected early in the disease are the fortunate ones, because their recognition and treatment in the secondary stage help them to escape locomotor ataxia and softening of the brain. Conversely the victim who judges the extent and severity of his syphilis by the presence or absence of a "breaking out" is just the one to think himself well for ten or twenty years because his skin is clean, and then to wake up some fine morning to find that he cannot keep his feet because his concealed syphilis is beginning to affect his nervous system.

Nature of the Tissue Change in Late Syphilis—Gummatous Infiltration.—The essential happening in late syphilis is that body tissue in which the germs are present is replaced by an abnormal tissue, not unlike a tumor growth. The process is usually painless. This material is shoddy, so to speak, and goes to pieces soon after it grows. The shoddy tissue is called "gummatous infiltration," and the tumor, if one is formed, is called a "gumma." The syphilitic process at the edge of the gumma shuts off the blood supply and the tissue dies, as a finger would if a tight band were wound around it, cutting off the blood supply. Gumma can develop almost anywhere, and where it does, there is a loss of tissue that can be replaced only by a scar. In this way gummas can eat holes in bone, or leave ulcerating sores in the skin where the gumma formed and died, or take the roof out of a mouth, or weaken the wall of a blood-

vessel so that it bulges and bursts. The sunken noses and roofless mouths are usually syphilitic—yet if they are recognized in time and put under treatment, all these horrible things yield as by magic. There are few greater satisfactions open to the physician than to see a tertiary sore which has refused to heal for months or years disappear under the influence of mercury and iodids within a few weeks. Still better, if treatment had been begnn early in the disease, and efficiently and completely carried out, none of these conditions need ever have been.

Destructive Effects of Late Syphilis.—Late syphilis is, therefore, destructive, and the harm that it does cannot, except within narrow limits, be repaired. It is responsible for the kind of damaged goods which gives the disease its reality for the every-day person. It is a matter of desperate importance where the damage is done. Late syphilis in the skin and bones, while horrible enough to look at, and disfiguring for life, is not the most serious syphilis, because we can put up with considerable loss of tissue and scarring in these quarters and still keep on living. But when late syphilis gets at the base of the aorta, the great vessel by which the blood leaves the heart, and damages the valves there, the numbering of the syphilitic's days begins. Few can afford to replace much brain substance by tertiary growths and expect to maintain their front against the world. Few are so young that they can meet the handicap that old age and hardening of the arteries, brought on prematurely by late syphilis, put upon them. When late syphilis affects the vital structures and gains headway, the victim goes to the

wall. This is the really dangerous syphilis—the kind of syphilis that shortens and cripples life.

There are few good estimates of the extent of late accidents, as we often call the serious later complications in syphilis, or of the part that they play in medicine as a whole. Too many of them are inconspicuous, or confused with other internal troubles that result from them. Deaths from syphilis are all the time being hidden under the general terms "Bright's disease," or "heart disease," or "paralysis," or "apoplexy." It is a hopeful fact that, even under unfavorable conditions, only a comparatively small percentage, from 10 to 20 per cent, seem to develop obvious late accidents. On the other hand, it must not be forgotten that the obscure costs of syphilis are becoming more apparent all the time, and the influence of the disease in shortening the life of our arteries and of other vital structures is more and more evident. There is still good reason for avoiding the effects of syphilis by every means at our disposal—by avoiding syphilis itself in the first place, and by early recognition of the disease and efficient treatment, in the second.

Late Syphilis of the Nervous System—Locomotor Ataxia.—The ways in which late syphilis can attack the nervous system form the real terrors of the disease to most people. Locomotor ataxia and general paralysis of the insane (or softening of the brain) are the best known to the laity, *though only two of many ways in which syphilis can attack the nervous system.* Though their relation to the disease was long suspected, the final touch of proof came only as recently as 1913, when Noguchi and Moore, of the

Rockefeller Institute, found the germs of the disease in the spinal cords of patients who had died of locomotor ataxia, and in the brains of those who had died of paresis. The way in which the damage is done can scarcely be explained in ordinary terms, but, as in all late syphilis, a certain amount of the damage once done is beyond repair. Locomotor ataxia begins to affect the lower part of the spinal cord first, so that the earliest symptoms often come from the legs and from the bladder and rectum, whose nerves are injured. Other parts higher up may be affected, and changes resulting in total blindness and deafness not infrequently occur. Through the nervous system, various organs, especially the stomach, may be seriously affected, and excruciating attacks of pain with unmanageable attacks of vomiting (gastric crises) are apt to follow. This does not, of course, mean that all pain in the stomach with vomiting means locomotor ataxia. All sorts of obscure symptoms may develop in this disease, but the signs in the eyes and elsewhere are such that a decision as to what is the matter can usually be made without considering how the patient feels, and by evidence which is beyond his control.

Late Syphilis of the Nervous System—General Paralysis.—General paralysis, or paresis, is a progressive mental degeneration, with relapses and periods of improvement which reduce the patient by successive stages to a jibbering idiocy ending invariably in death. Such patients may, in the course of their decline, have delusions which lead them to acts of violence. The only place for a paretic

is in an asylum, since the changes in judgment, will-power, and moral control which occur early in the disease are such that, before the patient gets unmanageable, he may have pretty effectually wrecked his business and the happiness of his family and associates. When the condition is recognized, the family must at least be forewarned, so that they can take action when it seems necessary. Both locomotor ataxia and paresis may develop in the same person, producing a combined form known as taboparesis.

The importance of locomotor ataxia and paresis in persons who carry heavy responsibilities is very great. In railroad men, for example, the harm that can be done in the early stages of paresis is as great as or even greater than the harm that an epileptic can do. A surgeon with beginning taboparesis may commit the gravest errors of judgment before his condition is discovered. Men of high ability, on whom great responsibilities are placed, may bring down with them, in their collapse, great industrial and financial structures dependent on the integrity of their judgment. The extent of such damage to the welfare of society by syphilis is unknown, though here and there some investigation scratches the surface of it. It will remain for the future to show us more clearly the cost of syphilis in this direction.

Syphilis and Mental Disease.—Williams,* before the American Public Health Association, has recently carefully summarized the rôle of syphilis in the production of insanity, and the cost of the disease to the State from the standpoint of mental disease alone.

* Williams, F. E.: "Preaching Health," Amer. Jour. Pub. Health, 1917, vi, 1273.

He estimates that 10 per cent of the patients who enter the Massachusetts State hospitals for the insane are suffering from syphilitic insanity. Fifteen per cent of those at the Boston Psychopathic Hospital have syphilis. In New York State hospitals, 12.7 per cent of those admitted have syphilitic mental diseases. In Ohio, 12 per cent were admitted to hospitals for the same reason. An economic study undertaken by Williams of 100 men who died at the Boston State Hospital of syphilitic mental disease, the cases being taken at random, showed that the shortening of life in the individual cases ranged from eight to thirty-eight years, and the total life loss was 2259 years. Of ten of these men the earning capacity was definitely known, and through their premature death there was an estimated financial loss of $212,248. It cost the State of Massachusetts $39,312 to care for the 100 men until their death. Seventy-eight were married and left dependent wives at the time of their commission to the hospital. In addition to the 100 men who became public charges, 109 children were thrown upon society without the protection of a wage-earner. Williams estimates, on the basis of published admission figures to Massachusetts hospitals, that there are now in active life, in that state alone, 1500 persons who will, within the next five years, be taken to state hospitals with syphilitic insanity.

Frequency of Locomotor Ataxia and General Paralysis.—The percentage of all syphilitic patients who develop either locomotor ataxia or paresis varies in different estimates from 1 to 6 per cent of the total number who acquire syphilis. The suscepti-

bility to any syphilitic disease of the nervous system is hastened by the use of alcohol and by overwork or dissipation, so that the prevalence of them depends on the class of patients considered. It is evident, though, that only a relatively small proportion of the total number of syphilitics are doomed to either of these fates. Taking the population as a whole, the percentage of syphilitics who develop this form of late involvement probably does not greatly exceed 1 per cent.

Treatment and Prevention of Late Syphilis of the Nervous System.—Locomotor ataxia and paresis, even more than other syphilitic diseases of the nervous system, are extremely hard to affect by medicines circulating in the blood, and for that reason do not respond to treatment with the ease that syphilis does in many other parts of the body. Early locomotor ataxia can often be benefited or kept from getting any worse by the proper treatment. For paresis, in our present state of knowledge, nothing can be done once the disease passes its earliest stages. In both these diseases only too often the physician is called upon to lock the stable door after the horse is stolen. The problem of what to do for the victims of these two conditions is the same as the problem in other serious complications of syphilis—keep the disease from ever reaching such a stage by recognizing every case early, and treating it thoroughly from the very beginning.

Summary

Summing up briefly the main points to bear in mind about the course of syphilis—there is a time,

at the very beginning of the disease, even after the first sore appears, when the condition is still at or near the place where it entered the body. At this time it can be permanently cured by quick recognition and thorough treatment. There are no fixed characteristics of the early stages of the disease, and it often escapes attention entirely or is regarded as a trifle. The symptoms that follow the spread of the disease over the body may be severe or mild, but they seldom endanger life, and again often escape notice, leaving the victim for some years a danger to other people from relapses about which he may know nothing whatever. Serious syphilis is the late syphilis which overtakes those whose earlier symptoms passed unrecognized or were insufficiently treated. Late syphilis of the skin and bones, disfiguring and horrible to look at, is less dangerous than the hidden syphilis of the blood-vessels, the nerves, and the internal organs, which, under cover of a whole skin and apparent health, maims and destroys its victims. Locomotor ataxia and softening of the brain, early apoplexy, blindness and deafness, paralysis, chronic fatal kidney and liver disease, heart failure, hardening of the blood-vessels early in life, with sudden or lingering death from any of these causes, are among the ways in which syphilis destroys innocent and guilty alike. And yet, for all its destructive power, it is one of the easiest of diseases to hold in check, and if intelligently treated at almost any but the last stages, can, in the great majority of cases, be kept from endangering life.

Chapter VI

The Blood Test for Syphilis

It seems desirable at this point, while we are trying to fix in mind the great value of recognizing syphilis in a person in order to treat it and thus prevent dangerous complications, to say something about the blood test for syphilis, the second great advance in our means of recognizing doubtful or hidden forms of the disease. The first, it will be recalled, is the identification of the germ in the secretions from the early sores.

Antibodies in the Blood in Disease.—It is part of the new understanding we have of many diseases that we are able to recognize them by finding in the blood of the sick person substances which the body makes to neutralize or destroy the poisons made by the invading germs, even when we cannot find the germs themselves. These substances are called antibodies, and the search for antibodies in different diseases has been an enthusiastic one. If we can by any scheme teach the body to make antibodies for a germ, we can teach it to cure for itself the disease caused by that germ. So, for example, by injecting dead germs as a vaccine in typhoid fever and certain other diseases, we are able to teach the body to form protective substances which will kill any of the

living germs of that particular kind which gain entrance to the body. Conversely, if the body is invaded by a particular kind of germ, and we are in doubt as to just which one it is, we can identify it by finding in the blood of the sick person the antibody which we know by certain tests will kill or injure a certain germ. This sort of medical detective work was first applied to syphilis successfully by Wassermann, Neisser, and Bruck in 1904, and for that reason the test for these antibodies in the blood in syphilis is called the Wassermann reaction. To be sure, it is now known that in syphilis it is not a true antibody for the poisons of the Spirochæta pallida for which we are testing, but rather a physical-chemical change in the serum of patients with syphilis, which can be produced by other things besides this one disease. But this fact has not impaired the practical value of the test, since the other conditions which give it are not likely to be confused with syphilis in this part of the world. The fact that no true antibody is formed simply makes it unlikely that we shall ever have a vaccine for syphilis.

Difficulties of the Test.—The Wassermann blood test for syphilis is one of the most complex tests in medicine. The theory of it is beyond the average man's comprehension. A large number of factors enter into the production of a correct result, and the attaining of that result involves a high degree of technical skill and a large experience. It is no affair for the amateur. The test should be made by a specialist of recognized standing, and this term does not include many of the commercial laboratories

which spring up like mushrooms in these days of laboratory methods.

The Recognition of Syphilis by the Blood Test.—When the Wassermann test shows the presence of syphilis, we speak of it as "positive." Granted that the test is properly done, a strong positive reaction means syphilis, unless it is covered by the limited list of exceptions. After the first few weeks of the disease, and through the early secondary period, the blood test is positive in practically all cases. Its reliability is, therefore, greatest at this time. Before the infection has spread beyond the first sore, however, the Wassermann test is negative, and this fact makes it of little value in recognizing early primary lesions. In about 20 to 30 per cent of syphilitic individuals the test returns to negative after the active secondary stage is passed. This does not necessarily mean that the person is recovering. It is even possible to have the roof fall out of the mouth from gummatous changes and the Wassermann test yet be negative. It is equally possible, though unusual, for a negative Wassermann test to be coincident with contagious sores in the mouth or on the genitals. So it is apparent that as an infallible test for syphilis it is not an unqualified success. But infallibility is a rare thing in medicine, and must be replaced in most cases by skilful interpretation of a test based on a knowledge of the sources of error. We understand pretty clearly now that the Wassermann test is only one of the signs of syphilis and that it has quite well-understood limitations. It has revealed an immense

amount of hidden syphilis, and in its proper field has had a value past all counting. Experience has shown, however, that it should be checked up by a medical examination to give it its greatest value. Just as all syphilis does not show a positive blood test, so a single negative test is not sufficient to establish the absence of syphilis without a medical examination. In a syphilitic, least of all, is a single negative Wassermann test proof that his syphilis has left him. In spite of these rather important exceptions, the Wassermann test, skilfully done and well interpreted, is one of the most valuable of modern medical discoveries.

The Blood Test in the Treatment and Cure of Syphilis.—In addition to its value in recognizing the disease, the Wassermann test has a second field of usefulness in determining when a person is cured of syphilis, and is an excellent guide to the effect of treatment. Good treatment early in a case of syphilis usually makes the Wassermann test negative in a comparatively short time, and even a little treatment will do it in some cases. But will it stay negative if treatment is then stopped? In the high percentage of cases it will not. It will become positive again after a variable interval, showing that the disease has been suppressed but not destroyed. For that reason, if we wish to be sure of cure, we must continue treatment until the blood test has become negative and stays negative. This usually means repeated tests, over a period of several years, in connection with such a course of treatment as will be described later. During a large part of this time

the blood test will be the only means of finding out how the disease is being affected by the treatment. To all outward appearance the patient will be well. He may even have been negative in repeated tests, and yet we know by experience that if treatment is stopped too soon, he will become positive again. There is no set rule for the number of negative tests necessary to indicate a cure. The whole thing is a matter of judgment on the part of an experienced physician, and to that judgment the patient should commit himself unhesitatingly. If a patient could once have displayed before him in visible form the immense amount of knowledge, experience, and labor which has gone into the devising and goes into the performing of this test, he would be more content to leave the decision of such questions to his physician than he sometimes is, and would be more alive to its reality and importance. The average man thinks it a rather shadowy and indefinite affair on which to insist that he shall keep on doctoring, especially after the test has been negative once or twice.

Just as a negative test may occur while syphilis is still actively present and doing damage in the body, so a positive Wassermann test may persist long after all outward and even inward signs of the disease have disappeared. These fixed positives are still a puzzle to physicians. But many patients with fixed positives, if well treated regardless of their blood test, do not seem to develop the late accidents of the disease. If their nervous systems, on careful examination, are found not to be affected, they are

reasonably safe as far as our present knowledge goes. People with fixed positives should accept the judgment of their physicians and follow their recommendations for treatment without worrying themselves gray over complications which may never develop.

Practical Points About the Test.—Certain practical details about this test are of interest to every one. Blood for it is usually drawn from a small vein in the arm. The discomfort is insignificant—no more than that of a sharp pin-prick. Blood is drawn in the same way for other kinds of blood tests, so that a needle-prick in the arm is not necessarily for a Wassermann test. There is no cutting and no scar remains. The amount of blood drawn is small and does not weaken one in the least. The test is done on the serum or fluid part of the blood, after the corpuscles are removed. It can also be done on the clear fluid taken from around the spinal cord, and this is necessary in certain syphilitic nervous diseases. There is nothing about the test that need make anybody hesitate in taking it, and it is safe to say that, when properly done, the information that it gives is more than worth the trouble, especially to those who have at any time been exposed, even remotely, to the risk of infection. But the test must be well done, by a large hospital or through a competent physician or specialist, and the results interpreted to the patient by the physician and not by the laboratory that does the test, or in the light of the patient's own half-knowledge of the matter.

Chapter VII

The Treatment of Syphilis

General Considerations

Scientific Methods of Treating Disease.—In trying to treat diseases caused by germs, the physician finds himself confronted by several different problems. Certain of these diseases run their course and the patient gets well or dies, pretty much regardless of anything that can be done for him. In certain others, because of our knowledge of the way in which the body makes its fight against the germ, we are able either to prepare it against attack, as in the case of protective vaccination, or we are able to help it to come to its own defense after the disease has developed. This can be done either by supplying it with antitoxin from an outside source, or helping it to make its own antitoxin by giving it dead germs to practise on. In the third group, the smallest of the three, we are fortunate enough to know of some substance which will kill the germ in the body without killing the patient. For such diseases we are said to have a "specific" method of treatment. Syphilis is one of these diseases. It is not to be understood that there is a sharp line of division between these three groups, since in every disease we try as far as possible to use all the methods we can bring to bear.

In pneumonia we have to let the body largely make its own fight, and simply help it to clear out the poisons formed by the germ, and keep the heart going until the crisis is past. In diphtheria, nowadays, we help the body out promptly by supplying it with antitoxin from an outside source, before it has time to make any for itself. We do the same thing for lockjaw if we are early enough. We practise the body on dead typhoid germs by vaccination until it is able to fight the living ones and destroy them before they get a foothold. The diseases for which we have specific methods of treatment are few in number, and each has associated with it the name of a particular drug. Quinin kills the germ of malaria, sodium salicylate cures inflammatory rheumatism, and mercury cures syphilis. To mercury in the case of syphilis must now be added salvarsan or arsenobenzol ("606"), the substance devised by Ehrlich in 1910, which will be considered in the next chapter.

The action of a specific is, of course, not infallible, but the failures are exceptional, so that one feels in attacking one of these diseases with its specific remedy as a man called upon to resist a savage beast would feel if he were armed with a powerful rifle instead of a stick. The situation in syphilis, for which there is a specific, as compared with tuberculosis, for which there is no specific, is incomparably in favor of the former. If we had as powerful weapons against tuberculosis as we have against syphilis, the disease would now be a rarity instead of the disastrous plague it is. Comparing the situa-

tion in two diseases for which we have specifics, such as syphilis and malaria, malaria has lost most of its seriousness as a problem in any part of the world, while syphilis is rampant everywhere. Malaria has, of course, been extinguished not only through the efficiency of quinin, but also through preventive measures directed at mosquitos, which are the carriers of the disease from person to person. But allowing for this, if it becomes possible to apply mercury and salvarsan as thoroughly to the prevention and treatment of syphilis as quinin can be applied to malaria, syphilis will soon be a rarity over the larger part of the civilized world. To bring the specific remedies for syphilis and the patient together constitutes, then, one of the greatest problems which confronts us in the control of the disease at the present day.

Mercury

Mercury in the Treatment of Syphilis.—Mercury is, of course, familiar to every one, and there is nothing peculiar about the mercury used in the treatment of syphilis. The fluid metallic mercury itself may be used in the form of salves, in which the mercury is mixed with fatty substances and rubbed into the skin. Mercury can be vaporized and the vapor inhaled, and probably the efficiency of mercury when rubbed into the skin depends to no small extent on the inhalation of the vapor which is driven off by the warmth of the body. Mercury in the form of chemical salts or compounds with other substances can be given as pills or as liquid medicine.

Similarly, the metal itself or some of its compounds can be injected in oil with a hypodermic needle into the muscles, and the drug absorbed in this way.

Misconceptions Concerning Mercury.—The use of mercury in syphilis is nearly as old, in Europe at least, as the disease itself. The drug was in common use in the fifteenth century for other conditions, and was promptly tried in the new and terrible disease as it spread over Europe, with remarkable results. But doses in the old days were anything but homeopathic, and overdoses of mercury did so much damage that for a time the drug fell into undeserved disfavor. Many of the superstitions and popular notions about mercury originated at this period in its history. It was supposed to make the bones "rot" and the teeth fall out, an idea which one patient in every ten still entertains and offers as an objection when told he must take mercury. Insufficiently treated syphilis is, of course, what makes the bones "rot," and not the mercury used in treating the disease. Mercury apparently has no effect on the bones whatever. The influence of the drug on the teeth is more direct and refers to the symptoms caused by overdoses. No physician who knows his business ever gives mercury at the present time to the point where the teeth are in any danger of falling out.

The Action of Mercury.—The action of mercury on syphilis is not entirely clear. The probabilities are that the drug, carried to all parts of the body by the blood, helps to build up the body's resistance and stimulates it to produce substances which kill the

germs. In addition, of course, it kills the germs by its own poisonous qualities. Its action is somewhat slow, and it is even possible for syphilitic sores containing the germs to appear, especially in the mouth and throat and about the genitals, while the person is taking mercury. Just as quinin must be used in malaria for some time after all signs of chill and fever have disappeared, to kill off all germs lurking in out-of-the-way corners of the body, or especially resistant to the drug, so it is necessary to continue the use of mercury long after it has disposed of all the obvious signs of the disease, like the eruption, headaches, and other symptoms, in order to prevent a relapse. No matter in what form it is used, the action of mercury on syphilis is one of the marvels of medicine. It can clear up the most terrific eruption with scarcely a scar, and transform a bed-ridden patient into a seemingly healthy man or woman, able to work, in the course of a few weeks or months. Symptoms often vanish before it like snow in a thaw. This naturally makes a decided impression, and often an unfavorable one, on the patient. It is only too easy to think that a disease which vanishes under the magic influence of a few pills is a trifle, and that outwardly cured means the same thing as inwardly cured. Mercury therefore carries its disadvantages with its advantages, and by its marvelous but transient effect only too often gives the patient a false idea of his progress toward cure.

Methods of Administering Mercury.—As has been said, mercury is given principally in three ways at the present time. It can be given by the mouth, in

the form of pills and liquids, and in this form is not infrequently incorporated into patent medicine blood purifiers. Mercury in pills and liquid medicine has the advantage for the patient of being an easy and inconspicuous way of taking the drug, and for that reason patients usually take it willingly or even insist on it if they know no better. Even small doses taken in this way will hide the evidences of syphilis so completely that only a blood test will show that it exists. If it were true that large doses taken by mouth could always be relied on to cure the disease, there would be little need for other ways of giving it. But there is a considerable proportion of persons with syphilis treated with pills who do not get rid of the disease even though the dose is as large as the stomach can stand. Such patients often have all the serious late complications which befall untreated patients. It seems almost impossible to give enough mercury by mouth to effect a cure. Thus pill treatment has come to be a second-best method, and suitable only in those instances in which we simply expect to control the outward signs rather than effect a cure.

The mercury rub or inunction, under ideal conditions, all things considered, is the best method of administering mercury to a patient with the hope of securing a permanent result. In this form of treatment the mercury made up with a salve is rubbed into the skin. The effectiveness of the mercurial rub is reduced considerably by its obvious disadvantages. It requires time to do the rubbing, and the ointment used seems uncleanly because of its

color and because it is necessary to leave what is not rubbed in on the skin so that it discolors the underwear. The mercurial rub is at its best when it is given by some one else, since few patients have the needed combination of conscientiousness, energy, and determination to carry through a long course. The advantages of the method properly carried out cannot be overestimated. It is entirely possible in a given case of syphilis to accomplish by a sufficient number of inunctions everything that mercury can accomplish, and with the least possible damage to the body. Treatment by mouth cannot compare with inunctions and cannot be made to replace them, when the only objection to the rubs is the patient's unwillingness to be bothered by them. The patient who is determined, therefore, to do the best thing by himself will take rubs conscientiously as long as his physician wishes him to do so, even though it means, as it usually does, not a dozen or two, but several hundreds of them, extending over a period of two or three years, and given at the rate of four to six rubs a week.

The giving of mercury by injections is a very powerful method of using the drug for the cure of syphilis. It reduces the inconvenience of effective treatment to a minimum and has all the other advantages of secrecy and convenience. It keeps the patient, moreover, in close touch with his physician and under careful observation. Injections by some methods are given daily, by others once or twice a week. The main disadvantage is the discomfort which follows each injection for a few hours. For

any one who has one of the serious complications of syphilis, injections may be a life and death necessity. Mercurial injections are a difficult form of treatment and should be given only by experts and physicians who are thoroughly familiar with their use.

Like every important drug in medicine, mercury is a poison if it is abused. Its earliest effect is on the mouth and teeth, and for that reason the physician, in treating syphilis by vigorous methods, has his patients give special attention to the care of their mouths and teeth and of their digestions as well. Mercury also affects the kidneys and the blood, if not properly given, and for that reason the person who is taking it must be under the care and observation of a physician from time to time. Only the ignorant undertake to treat themselves for syphilis, though how many of these there are can be inferred from the amount of patent medicine and quack treatment there is in these fields. Properly given, mercury has no harmful effects, and there is no ground whatever for the notion some people have, that mercury will do them more harm than a syphilitic infection. Improperly used, either as too much or too little, it is capable of doing great harm, not only directly, but indirectly, by making it impossible later for the patient to take enough to cure the disease. The extent to which some overconfident persons fail in their efforts to treat and cure themselves explains the necessity for such a warning.

Effect of Mercurial Treatment on the Blood Test.—The effect of mercury on the Wassermann blood test for syphilis should also be generally understood.

In many cases it is possible, especially early in the disease, by a few rubs of mercurial ointment, or a few injections of mercury, or even in some cases by the use of pills or liquid medicine, to make a positive blood test for syphilis negative. But this negative test is only temporary. Within a short time, usually after treatment is stopped, the test becomes positive again, showing that the mercury has not yet cured, but simply checked, the disease, and that it may at any time break out again or do internal damage. It must be understood that a negative blood test just after a patient has been taking mercury *has no meaning*, so far as guaranteeing a cure is concerned. It is only the blood test that is repeatedly negative after the effect of mercury wears off, which shows the disease is cured. Yet many a syphilitic may and does think himself cured, and may marry in good faith, or be allowed a health certificate, only to become positive again. He may then develop new sores without his knowledge even, and perhaps infect his wife, or may himself in later years develop some of the serious consequences of the disease.

Whenever one talks to a person who knows something about the advances in knowledge in the past few years about the treatment of syphilis, and goes into detail about mercury, the odds are two to one that he will be interrupted by the question, "But what about '606'?" Before talking about salvarsan, or "606," it is well to say here that this new drug, wonderful though it is, has in no sense done away with the necessity for the use of mercury in the

treatment of syphilis. Mercury has as high a reputation and is as indispensable in the cure of syphilis today as it was four centuries ago. It has as yet no substitutes. We appreciate every day, more and more, how thoroughly it can be depended on to do the work we ask of it.*

* A drug known as the iodid of potash (or soda) is widely used in the treatment of syphilis, and especially of the late forms of the disease, such as gummas and gummatous sores. It has a peculiar effect on gummatous tissue, causing it to melt away, so to speak, and greatly hastening the healing process. So remarkable is this effect that it gives the impression that iodids are really curing the syphilis itself. It has been shown, however, that iodids have no effect on the germs of syphilis, and therefore on the cause of the disease, although they can promote the healing of the sores in the late stages. For this reason iodids must always be used in connection with mercury or salvarsan if the disease itself is to be influenced. It is occasionally difficult to get patients to understand this after they have once taken "drops," as the medicine is often called. Otherwise the use of iodids in syphilis is of medical rather than general interest.

Chapter VIII

The Treatment of Syphilis (Continued)

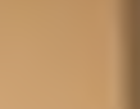
Salvarsan

The Discovery of Salvarsan ("606").—Salvarsan, or "606," is a chemical compound used in the modern treatment of syphilis. It was announced to the world by Paul Ehrlich, its brilliant discoverer, in December, 1910. Ehrlich and his Japanese coworker, Hata, had some years before been impressed with the remarkable effect certain dyes had on the parasites infesting certain animals and which resemble the germs that cause the African sleeping sickness in man. When one of these dyes was dissolved and injected into the blood of the sick animal, the dye promptly picked out and killed all the parasites, but did not kill the animal. Dyes are very complex chemical substances and certain of them seem to have an affinity for germs. It occurred to Ehrlich that if a substance could be devised which was poisonous for the germ and not for the patient it might be possible to prepare a specific for a given disease, acting as quinin does in malaria. By combining a poison with a dye it might be made to pick out the germs and leave the body unharmed.

The poison which had already been shown to be especially effective in killing germs like those of

PAUL EHRLICH
[1854–1915]

(From "Year Book of Skin and Venereal Diseases," 1916, vol. ix. "Practical Medicine Series," Year Book Publishers, Chicago.)



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Salvarsan.—It will be recalled that
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syphilis was arsenic. The problem was to get arsenic into such a combination with other chemical substances that it would lose its poisonous quality for man, but still be poisonous for the spirochete of syphilis. Ehrlich and Hata began to make chemical compounds of arsenic in the laboratory with chemical substances like the dyes. As the compounds grew more complex they were tested on animals and some of them found to have the qualities for which their inventors were searching. Some of them are even used at the present time in the treatment of certain diseases. The six hundred and sixth compound in this series, when tested on syphilitic animals, was found to be extraordinarily efficient in killing the germ of syphilis, even when used in quantities so small as not to injure the animal. Among other things, there could be no better example of the importance of animal experiment in medicine. If the cause of syphilis had not been known, and the disease not given to animals, the discovery of salvarsan might never have been made. After extensive experiments on syphilitic rabbits, which showed that the drug could be given safely in amounts large enough to cure the animal at a single dose, it was tried on man, two physicians, Drs. Hoppe and Wittneben, volunteering for the test. When it was found that the drug did them no harm, it was used on syphilitic patients for the first time. As soon as its remarkable effect on the disease in them was fully established, Ehrlich announced the discovery before the medical society of Magdeburg, and the results were published in one of the most

important of the German medical journals. Ehrlich then sent out from his own laboratory several thousands of doses of the new drug to all the principal clinics and large hospitals of the world for an extended trial. It was not until the results of this trial became apparent that he permitted its manufacture on a commercial scale. There could scarcely be a more ideal way of introducing a new form of treatment than the one adopted by Ehrlich, or one better surrounded by all the safeguards that conservatism could suggest.

The Mistaken Conception of "Single Dose Cure." —In the light of his experience with salvarsan in animals, Ehrlich hoped to accomplish the cure of syphilis in man by a single dose of the new drug, as he had been able to cure it in rabbits. All the earlier use of salvarsan in the treatment of syphilis was carried out with this idea in view, and the remarkable way in which the symptoms vanished before the large doses used encouraged the belief that Ehrlich's ideal for it had been fulfilled. But it was not long before it was found that syphilis had a stronger hold on the human body than on animals, and that patients relapsed after a single dose, either as shown by the blood test or by the reappearance, after varying intervals, of the eruption or other symptoms of the disease. Unfortunately, the news of the discovery of salvarsan, and with it Ehrlich's original idea that it would cure syphilis by a single dose, had gotten into the newspapers. Numbers of syphilitics treated with it have been deceived by this notion into believing themselves cured. In those whose symptoms

came back in severe form, the trouble was, of course, found out. But there are at the present time, undoubtedly, many persons who received a single dose of salvarsan for a syphilis contracted at this time, and who today, having never seen any further outward signs of the disease, believe themselves cured, when in reality they are not. In the next twenty years the introduction of salvarsan will probably result in a wave of serious late syphilis, the result of cases insufficiently treated in the early days of its use. It was not long before it was found that not one but several doses of salvarsan were necessary in the treatment of syphilis, and soon many physicians of wide experience began to call in mercury again for help when salvarsan proved insufficient for cure. At the present time the use of both mercury and salvarsan in the treatment of the disease is the most widely accepted practice, and seems to offer the greatest assurance of cure.

The Value of Salvarsan.—Salvarsan has done for the treatment of syphilis certain things of the most far-reaching importance from the standpoint of the interests of society at large. It has first of all made possible the control of the *contagious* lesions of the disease. Secondly, as was said before, it has made possible the cure of the infection in the primary stage, before it has spread from the starting-point in the chancre to the rest of the body. To understand how it accomplishes these results it is important to understand its mode of action.

The Action of Salvarsan.—It will be recalled that Ehrlich planned salvarsan to kill the germs of syph-

ilis, just as quinin kills the germs of malaria. It was intended that when the drug entered the blood it should be carried to every part of the body, and fastening itself on the spirochetes, kill them without hurting the body. This is seemingly exactly what the drug does, and it does it so well that within twenty-four hours after a dose of it is given into the blood there is not a living germ of syphilis, apparently, in any sore on the body. If the same thing happened in all the out-of-the-way corners of the body, the cure would be complete. The natural result of removing the cause of the disease in this fashion is that the sores produced by it heal up. They heal with a speed and completeness that is an even greater marvel than the action of mercury. The more superficial the eruption, the quicker it vanishes, so that in the course of a few days all evidence of the disease may disappear. This is especially true of the grayish patches in the mouth and about the genitals, which have already been described as the most dangerously contagious lesions of syphilis. It is evident, therefore, that to give salvarsan in a case of contagious syphilis is to do away with the risk of spreading the disease in the quickest and most effective fashion. It is as if a person with scarlet fever could be dipped in a disinfecting bath and then turned loose in the community without the slightest danger of his infecting others. How much scarlet fever would there be if every case of the disease could be treated in this way? There would be as little of it as there now is of smallpox, compared to the wholesale plagues of that disease which used to kill

off the population of whole towns and counties in the old days. If we could head off the crops of contagious sores in every syphilitic by the use of "606," syphilis in the same way would take a long step toward its disappearance. It is not a question, in this connection, of curing the disease with salvarsan, but of preventing its spread, and in doing that, salvarsan is one of the things we have been looking for for centuries.

The Treatment of Syphilis With Salvarsan.—Salvarsan, the original "606," was improved on by Ehrlich in certain ways, which make it easier for the ordinary physician to use it. The improved salvarsan is called neosalvarsan ("914") and has no decided advantages over the older preparation except on the score of convenience. Both salvarsan and neosalvarsan are yellow powders, which must be manufactured under the most exacting precautions, to prevent their being intensely poisonous, and must be sealed up in glass tubes to prevent their spoiling in the air. They were formerly administered by dissolving them or by mixing with oil and then injecting them into the muscles, much as mercury is given by injection. At the present time, however, the majority of experts prefer to dissolve the drug in water or salt solution and to inject it into the blood directly, through one of the arm veins. There is very little discomfort in the method, as a rule—no more than there is to the taking of blood for a blood test. At the present time the quantity of the drug injected is relatively small for the first injection, growing larger with each following injection. The

intervals between injections vary a good deal, but a week is an average. The number of injections that should be given depends largely on the purpose in view. If the salvarsan is relied on to produce a cure, the number may be large—as high as twenty or more. If it is used only to clear up a contagious sore, a single injection may be enough for the time being. But when only a few injections are used, mercury becomes the main reliance, and a patient who cannot have all the salvarsan he needs should not expect two or three doses of it to produce a cure. The publicity which has been given to this form of treatment has led many patients to take matters into their own hands and to go to a physician and ask him to give them a dose of salvarsan, much as they might order a highball on a cold day. The physician who is put in a position like this is at a disadvantage in caring for his patient, and the patient in the end pays for his mistaken idea that he knows what is good for himself. The only judge of the necessity of giving salvarsan, and the amount and the frequency with which to give it, is the expert physician, and no patient who is wise will try to take the thing into his own hands. There are even good reasons for believing that the patient who is insufficiently treated with salvarsan is at times worse off than the patient who, unable to afford the drug at all, has had to depend for his cure entirely on mercury.

It is one of the tragedies of the modern private practice of medicine that the physician has so often to consult the patient's purse in giving or withholding salvarsan, and for that reason, except in the well-

to-do, it is seldom used to the best advantage. Such a drug, so powerful an agent in the conservation of the public health, should be available to all who need it in as large amounts as necessary, without a moment's hesitation as to whether the patient can afford it or not. It is not too much to urge that private patent rights should not be allowed to control the price and distribution of such a commodity to the public. Upon the payment of suitable royalties to the inventor the manufacture of such a drug should be thrown open to properly supervised competition, as in the case of diphtheria antitoxin, or be taken over by the Government and distributed at cost, at least to hospitals. To bring about such a revision of our patent law every thinking man and woman may well devote a share of personal energy and influence.

The manner of giving salvarsan is as important for the patient as the correct performance of an operation, and the safeguards which surround it are essentially the same. The drug is an extremely powerful one, more powerful than any other known, and in the usual doses it carries with it into the body for the destruction of the germs of syphilis many times the amount of arsenic needed to kill a human being. If something should go astray, the patient might lose his life as promptly as if the surgeon or the anesthetist should make a slip during an operation. To make the giving of salvarsan safe, the judgment, experience, and training of the specialist are not too much to ask.

The dangers of salvarsan are easily exaggerated,

and some people have a foolish fear of it. The wonderful thing about the drug is that, with all the possibility for harm that one might expect in it, it so seldom makes any trouble. It is, of course, first carefully tested on animals when it is manufactured, so that no poisonous product is placed on the market. It is as safe to take salvarsan at the hands of an expert as it is to take ether for an operation or to take antitoxin for diphtheria, and that is saying a good deal. Most of the stories of accidents that go the rounds among laymen date back to the days when first doses were too large and made the patients rather sick for a time. Present methods and cautions about administering the drug are such that, except for the improvement in their condition, patients seldom know they have received it. The first dose may light the eruption up a little, but this is only because the drug stirs the germs up before it kills them, and improvement begins promptly within a few hours or a day or two.

The first characteristic of salvarsan which we should bear in mind especially, in our interest in the social aspects of syphilis, is then the rapidity rather than the thoroughness of its action. It is a social asset to us because it protects us from the infected person, and it is an asset to the patient because it will set him on his feet, able to work and go about his business, in a fraction of the time that mercury can do it.

The efficiency of salvarsan in the cure of syphilis in the early stages is due, first, to the large amount of it that can be introduced into the body without

killing the patient, and second, to the promptness with which it gets to the source of trouble. In the old days, while we were laboriously getting enough mercury into the patient to help him to stop the invading infection, the germs marched on into his blood and through his body. With salvarsan, the first dose, given into the blood, reaches the germs forthwith and destroys them. There is enough of it and to spare. Twenty-four hours later scarcely a living germ remains. The few stragglers who escape the fate of the main army are picked up by subsequent doses of salvarsan and mercury, and a cure is assured. There is all the difference between stopping a charge with a machine gun and stopping it with a single-shot rifle, in the relative effectiveness of salvarsan and mercury at the beginning of a syphilitic infection.

In syphilis affecting the central nervous system, salvarsan, modified in various ways, may be injected into the spinal canal in an effort to reach the trouble more directly. The method, which is known as *intradural therapy*, has had considerable vogue, but a growing experience with it seems to indicate that it has less value than was supposed, and is a last resort more often than anything else. It involves some risk, and is no substitute for efficient treatment by the more familiar methods. If necessary, a patient can have the benefit of both.

The *luetin test* was devised by Noguchi for the presence of syphilis, and is performed by injecting into the skin an emulsion of dead germs. A pustule forms if the test is positive. It is of practical value only in late syphilis, and a negative test is no proof of the absence of the disease. Positive tests are sometimes obtained when syphilis is not present. For these reasons the test is not as valuable as was at first thought.

Chapter IX

The Cure of Syphilis

There are few things about our situation with regard to syphilis that deserve more urgent attention than questions connected with the cure of the disease, and few things in which it is harder to get the necessary coöperation. On the one hand, syphilis is one of the most curable of diseases, and on the other, it is one of the most incurable. At the one extreme we have the situation in our own hands, at our own terms—at the other, we have a record of disappointing failure. As matters stand now, we do not cure syphilis. We simply cloak it, gloss it over, keep it under the surface. Nobody knows how much syphilis is cured, partly because nobody knows how much syphilis there really is, and partly because it is almost an axiom that few, except persons of high intelligence and sufficient means, stick to treatment until they can be discharged as cured. Take into consideration, too, the fact that the older methods of treating syphilis were scarcely equal to the task of curing the disease, and it is easy to see why the idea has arisen, even among physicians, that once a syphilitic means always a syphilitic, and that the disease is incurable.

Radical or Complete Cure.—In speaking of the

cure of syphilis, it is worth while to define the terms we use rather clearly. It is worth while to speak in connection with this disease of radical as distinguished from symptomatic cure. In a radical cure we clear up the patient so completely that he never suffers a relapse. In symptomatic cure, which is not really cure at all, we simply clear up the symptoms for which he seeks medical advice, without thought for what he may develop next. Theoretically, the radical cure of syphilis should mean ridding the body of every single germ of the disease. Practically speaking, we have no means of telling with certainty when this has been done, or as yet, whether it ever can be done. It may well be that further study of the disease will show that, especially in fully developed cases, we simply reduce the infection to harmlessness, or suppress it, without eradicating the last few germs. Recent work by Warthin tends to substantiate this idea. So we are compelled in practice to limit our conception of radical cure to the condition in which we have not only gotten rid of every single symptom of active syphilis in the patient, but have carried the treatment to the point where, so far as we can detect in life, he never develops any further evidence of the disease. He lives out his normal span of years in the normal way, and without having his efficiency as a human being affected by it. In interpreting this ideal for a given case we should not forget that radical methods of treating syphilis are new. Only time can pass full verdict upon them. Yet the efficiency of older methods was sufficient to control the disease in a

considerable percentage of those affected. There is, therefore, every reason to believe that radical cure under the newer methods is a practical and attainable ideal in an even higher percentage of cases and offers all the assurance that any reasonable person need ask for the conduct of life. It should, therefore, be sought for in every case in which expert judgment deems it worth-while. It cannot be said too often that prospect of radical cure depends first and foremost upon the stage of the disease at which treatment is begun, and that it is unreasonable to judge it by what it fails to accomplish in persons upon whom the infection has once thoroughly fastened itself.

Symptomatic or Incomplete Cure.—Symptomatic "cure" is essentially a process of cloaking or glossing over the infection. It is easy to obtain in the early stages of the disease, and in a certain sense, the earlier in the course of the disease such half-way methods are applied, the worse it is for patient and public. In the late stages of the disease symptomatic cure of certain lesions is sometimes justifiable on the score that damage already done cannot be repaired, the risk of infecting others is over, and all that can be hoped for is to make some improvement in the condition. But applied early, symptomatic methods whisk the outward evidences temporarily out of sight, create a false sense of security, and leave the disease to proceed quietly below the surface, to the undoing of its victim. Such patients get an entirely false idea of their condition, and may refuse to believe that they are not really cured, or may have

no occasion even to wonder whether they are or not until they are beyond help. Every statement that can be made about the danger of syphilis to the public health applies with full force to the symptomatically treated early case. Trifling relapses, highly contagious sores in the mouth, or elsewhere, are not prevented by symptomatic treatment and pass unnoticed the more readily because the patient feels himself secure in what has been done for him. In the first five years of an inefficiently treated infection, and sometimes longer, this danger is a very near and terrible one, to which thousands fall victims every year, and among them, perhaps, some of your friends and mine. Dangerous syphilis is imperfectly treated syphilis, and at any moment it may confront us in our drawing rooms, in the swimming pool, across the counter of the store, or in the milkman, the waitress, the barber. It confronts thousands of wives and children in the person of half-cured fathers, infected nurse-maids, and others intimately associated with their personal life. These dangers can be effectively removed from our midst by the substitution of radical for symptomatic methods and ideals of cure. A person under vigorous treatment with a view to radical cure, with the observation of his condition by a physician which that implies, is nearly harmless. In a reasonable time he can be made fit even for marriage. The whole contagious period of syphilis would lose its contagiousness if every patient and physician refused to think of anything but radical cure.

In such a demand as this for the highest ideals in

the treatment of a disease like syphilis, the medical profession must, of course, stand prepared to do its share toward securing the best results. No one concedes more freely than the physician himself that, in the recognition and radical treatment of syphilis, not all the members of the medical profession are abreast of the most advanced knowledge of the subject. Syphilis, almost up to the present day, has never been adequately taught as part of a medical training. Those who obtained a smattering of knowledge about it from half a dozen sources in their school days were fortunate. Thorough knowledge of the disease, of the infinite variety of its forms, of the surest means of recognizing it, and the best methods of treating it, is only beginning to be available for medical students at the hands of expert teachers of the subject. The profession, by the great advances in the medical teaching of syphilis in the past ten years, and the greater advances yet to come, is, however, doing its best to meet its share of responsibility in preparation for a successful campaign. The combination of the physician who insists on curing syphilis, with the patient who insists on being cured, may well be irresistible.

Factors Influencing the Cure of Syphilis.—Cost.—We must admit that, as matters stand now, few patients are interested in more than a symptomatic cure. Yet the increasing demand for blood tests, for example, shows that they are waking up. Ignorance of the possibility and necessity for radical cure, and of the means of obtaining it, explains much of the indifference which leads patients to disappear from

their physician's care just as the goal is in sight. But there is another reason why syphilis is so seldom cured, and this is one which every forward-looking man and woman should heed. The cure of syphilis means from two to four years of medical care. All of us know the cost of such services for even a brief illness. A prolonged one often sets the victim farther back in purse than forward in health. The better the services which we wish to command in these days, usually, the greater the cost, and expert supervision, at least, is desirable in syphilis. It is a financial impossibility for many of the victims of syphilis to meet the cost of a radical cure. It is all they can do to pay for symptomatic care in order to get themselves back into condition to work. We cannot then reasonably demand of these patients that they shall be cured, in the interest of others, unless we provide them with the means. In talking about public effort against syphilis, this matter will be taken up again. We have recognized the obligation in tuberculosis. Let us now provide for it in syphilis.

Factors Controlling the Cure of Syphilis—Stage, Time, Effective Treatment.—Three factors enter into the radical cure of syphilis, upon which the possibility of accomplishing it absolutely depends. The first of these concerns the stage of the disease at which treatment is begun; the second is the time for which it is kept up; and the third is the coöperation of doctor and patient in the use of effective methods of treatment.

Cure in the Primary Stage.—It goes almost with-

out saying that the prospect of curing a disease is better the earlier treatment is begun. This is peculiarly so in syphilis. In the earliest days of the disease, while the infection is still local and the blood test negative, the prospects of radical cure are practically 100 per cent. This is the so-called abortive cure, the greatest gift which salvarsan has made to our power to fight syphilis. It depends on immediate recognition of the chancre and immediate and strenuous treatment. So valuable is it that several physicians of large experience have expressed the belief that even in cases in which we are not entirely sure the first sore is syphilitic, we should undertake an abortive treatment for syphilis. This view may be extreme, but it illustrates how enormously worth while the early treatment of syphilis is.

Cure in the Secondary Stage.—The estimation of the prospect of recovery when the secondary symptoms have appeared and the germs are in the blood is difficult, owing to the rapid changes in our knowledge of the disease, which are taking place almost from day to day. The patient usually presses his physician for an estimate of his chances, and in such cases, after carefully explaining why our knowledge is fallible and subject to change, I usually estimate that for a patient who will absolutely follow the advice of an expert, the prospects are well over 90 per cent good.

The Outlook in Late Syphilis.—After the first year of the infection is passed, or even six months after the appearance of the secondary rash, the outlook for permanent cure begins to diminish and falls rap-

idly from this point on. That means that we are less and less able to tell where we stand by the tests we now have.

In the later stages of the disease we are gradually forced back to symptomatic measures, and are often rather glad to be able to say to the patient that we can clear up his immediate trouble without mentioning anything about his future.

The gist of the first essential, then, is to treat syphilis early rather than late. If this is done, the prospect of recovery is better than in many of the acute fevers, such as scarlet fever, a matter of every day familiarity, and better, on the whole, than in such a disease as tuberculosis. *Yet this does not mean that the men or women whose syphilis is discovered only after a lapse of years, must be abandoned to a hopeless fate.* For them, too, excellent prospects still exist, and careful, persistent treatment may, in a high percentage of cases, keep their symptoms under control for years, if not for the ordinary life-time.

The Time Required for Cure.—Time is the second vital essential for cure. Here we stand on less certain ground than in the matter of the stage of the disease. The time necessary for cure is not a fixed one, and depends on the individual case. Long experience has taught us that the cure of syphilis is not a matter of weeks or months, as patients so often expect, but of years. For the cure of early primary syphilis ("abortive" cure) not the most enthusiastic will discharge a patient short of a year, and the conservative insist on two years or more of observation at least. In the fully developed infection in the

secondary stage, three years is a minimum and four years an average for treatment to produce a cure. Five years of treatment and observation is not an uncommon period. In the later stages of the disease, when we are compelled to give up the ideal of radical cure, our best advice to syphilitic patients, as to those with old tuberculosis, is that after they have had two years of good treatment, they should submit to examination once or twice a year, and not grumble if they are called upon to carry life insurance in the form of occasional short courses of treatment for the rest of their days.

Efficient Treatment.—The third essential is efficient treatment, about the nature of which there is still some dispute. The controversy, however, is mainly about details. In the modern methods for treatment of syphilis both salvarsan and mercury are used, as a rule, and keep the patient decidedly busy for the first year taking rubs and injections, and pretty busy for the second. The patient is not incapacitated for carrying on his usual work. The intervals of rest between courses of salvarsan and mercury are short. In the third year the intervals of rest grow longer, and in the absence of symptoms the patient has more chance to forget the trouble. Here the doctor's difficulties begin, for after two or three negative blood tests with a clear skin, all but the most conscientious patients disappear from observation. These are the ones who may pay later for the folly of their earlier years.

The aim in syphilis, then, is to crush the disease at its outset by a vigorous campaign. Not until

an amount of treatment which experience has shown to be an average requirement has been given, is it safe to draw breath and wait to see what the effect on the enemy has been. Dilatory tactics and compromises are often more dangerous than giving a little more than the least amount of treatment possible, for good measure. This is, of course, always provided the behavior of the body under the ordeal of treatment is closely studied and observed by an expert and that it is not blindly pushed to the point where injury is done by the medicine rather than the disease.

The Importance of Salvarsan.—Salvarsan is an absolute essential in the treatment of those early infections in which an abortive cure can be hoped for, and in them it must be begun without a day's delay. To some extent, the abortive cure of the disease, with its 100 per cent certainty, will therefore remain a luxury until the public is aroused to the necessity of providing it under safe conditions and without restrictions for all who need it. At all stages of the disease after the earliest it is an aid, and a powerful one, but it cannot do the work alone, as mercury usually can. But though mercury is efficient, it is slow, and the greater rapidity of action of salvarsan and its power to control infectious lesions give it a unique place. The combination of the two is powerful enough to fully justify the statement that none of the great scourges of the human race offers its victim a better prospect of recovery than does syphilis.

Is a cure worth while? There is only one thing

that is more so, and that is never to have had syphilis at all. The uncured syphilitic has a sword hanging over his head. At any day or hour the disease which he scorned or ignored may crush him, or what is worse, may crush what is nearest and dearest to him in the world. It does it with a certainty which not even the physician who sees syphilis all the time as his life-work can get callous to. It is gambling with the cards stacked against one to let a syphilitic infection go untreated, or treated short of cure. It is criminal to force on others the risks to which an untreated syphilitic subjects those in intimate contact with him.

The Meaning of "You are Cured."—How do we judge whether a patient is radically cured or not? Here again we confront the problem of what constitutes the eradication of the disease. In part we reckon from long experience, and in part depend upon the refinement of our modern tests. Repeated negative Wassermann tests on the blood over several years, especially after treatment is stopped, are an essential sign of cure. This must be reinforced, as a rule, by a searching examination of the nervous system, including a test on the fluid of the spinal cord. This is especially necessary when we have used some of the quick methods of cure, like the abortive treatment. When we have used the old reliable course, it is less essential, but desirable. Can we ever say to a patient in so many words, "Go! you are cured"? This is the gravest question before experts on syphilis today, and in all frankness it must be said that the conservative man will not

answer with an unqualified "Yes." He will reserve the right to say to the patient that he must from time to time, in his own interest, be reëxamined for signs of recurrence, and perhaps from time to time reinforce his immunity by a course of rubs or a few mercurial injections. Such a statement is not pessimism, but merely the same deliberate recognition of the fallibility of human judgment and the uncertainty of life which we show when we sleep out-of-doors after we have been suspected of having tuberculosis, or when we take out accident or life insurance.

Chapter X

Hereditary Syphilis

It seems desirable, at this point, to take up the hereditary transmission of syphilis in advance of the other modes of transmitting the disease, since it is practically a problem all to itself.

Syphilis is one of the diseases whose transmission from parent to child is frequent enough to make it a matter of grave concern. It is, in fact, the great example of a disease which may be acquired before birth. Just as syphilis is caused only by a particular germ, so hereditary syphilis is also due to the same germ, and occurs as a result of the passage of that germ from the mother's body through the membranes and parts connecting the mother and child, into the child. Hereditary syphilis is not some vague, indefinite constitutional tendency, but syphilis, as definite as if gotten from a chancre, though differing in some of its outward signs.

Transmission of Syphilis From Mother to Child.—It is a well-known fact that the mothers of syphilitic children often seem conspicuously healthy. For a long time it was believed that the child could have syphilis and the mother escape infection. The child's infection was supposed to occur through the infection of the sperm cells of the father with the

germ of syphilis. When the sperm and the egg united in the mother's body, and the child developed, it was supposed to have syphilis contracted from the father, and the mother was supposed to escape it entirely in the majority of such cases. This older idea has been largely given up, chiefly as a result of the enormous mass of evidence which the Wassermann test has brought to light about the condition of mothers who bear syphilitic children, but themselves show no outward sign of the disease. It is now generally believed that there is no transmission of syphilis to the child by its father, the father's share of responsibility for the syphilis lying in his having infected the mother. None the less, it must be conceded that this is still debatable ground, and that quite recently the belief that syphilis can be transmitted by the father has been supported on theoretical grounds by good observers.

Absence of Outward Signs in Syphilitic Mothers.—The discovery that the mother of a syphilitic child has syphilis is of great importance in teaching us how hereditary syphilis can be avoided by preventing infection of the mother. It is even more important to understand because of the difficulty of convincing the seemingly healthy mother of a syphilitic child that she herself has the disease and should be treated for it, or she will have other syphilitic children. Just why the mother may never have shown an outward sign of syphilis and yet have the disease and bear syphilitic children is a question we cannot entirely answer, any more than we can explain why all obvious signs of syphilis are absent

in some patients even without treatment, while others have one outbreak after another, and are never without evidence of their infection, unless it is suppressed by treatment. Probably at least a part of the explanation lies in the fact, already mentioned, that syphilis is a milder disease in women than in men, and has more opportunities for concealing its identity.

Healthy Children of Syphilitic Mothers.—If the mother of a syphilitic child has the disease, is it equally true that a syphilitic mother can never bear a healthy child? It certainly is not, especially in the late years of the disease, after it has spent much of its force. When the multitudes of germs present in the secondary period have died out, whether as a result of treatment or in the normal course of the disease, a woman who still has syphilis latent in her or even in active tertiary form, may bear a healthy child. Such a child may be perfectly healthy in every particular, and not only not have syphilis, but show no sign that the mother had the disease. It is in the period of active syphilis, the three, four, or five years following her infection, that the syphilitic mother is most likely to bear syphilitic children.

Non-hereditary Syphilis in Children.—Syphilis in children is not always hereditary, even though the signs of it appear only a short time after birth. A woman who at the beginning of her pregnancy was free from the disease, may acquire it while she is still carrying the child as a result of her husband's becoming infected from some outside source. The limitation which pregnancy may put on sexual in-

dulgence leads some men to seek sexual gratification elsewhere than with their wives. The husband becoming infected, then infects his pregnant wife. There are no absolute rules about the matter, but if the mother is not infected until the seventh month of her pregnancy, the child is likely to escape the hereditary form of the disease. On the other hand, imagine the prospects for infection when the child is born through a birth-canal filled with mucous patches or with a chancre on the neck of the womb. Children infected in this way at birth do not develop the true hereditary form of the disease, but get the acquired form with a chancre and secondary period, just as in later life.

Effect of Syphilis on the Child-bearing Woman.—What does syphilis mean for the woman who is in the child-bearing period? In the first place, unlike gonorrhea, which is apt to make women sterile, syphilis does not materially reduce the power to conceive in most cases. A woman with active syphilis alone may conceive with great frequency, but she cannot carry her children through to normal birth. The syphilitic woman usually has a series of abortions or miscarriages, in which she loses the child at any time from the first to the seventh or eighth month. Of course, there are other causes of repeated miscarriages, but syphilis is one of the commonest, and the occurrence of several miscarriages in a woman should usually be carefully investigated. The miscarriage or abortion occurs because the unborn child is killed by the germs of the disease, and is cast out by the womb as if it were a foreign body.

Usually the more active the mother's syphilis, the sooner the child is infected and killed, and the earlier in her pregnancy will she abort. Later in the disease the child may not be infected until well along, and may die only at the ninth month or just as it is born. In other words, the rule is that the abortions are followed later by one or more still births. This is by no means invariable. The mother may abort once at the third month, and with the next pregnancy bear a living syphilitic child. The living syphilitic children are usually the results of infection in the later months of the child's life inside its mother, or are the result of higher resistance to the disease on the part of the child or of the efficient treatment of the mother's syphilis.

Variations on the Rule.—It should never be forgotten that all these rules are subject to variation, and that where one woman may have a series of miscarriages so close together that she mistakes them for heavy, irregular menstrual flows, and never realizes she is pregnant, another may bear a living child the first time after her infection, or still another woman after one miscarriage may have a child so nearly normal that it may attain the age of twenty or older, before it is suspected that it has hereditary syphilis. Again a woman with syphilis may remain childless through all the years of her active infection, and finally, in her first pregnancy, give birth to a healthy child, even though she still has the disease in latent form herself. Still another may have a miscarriage or two and then bear one or two healthy children, only to have the last child, years after her

infection, be stillborn and syphilitic. The series of abortions, followed by stillborn or syphilitic children, and finally by healthy ones, is only the general and by no means the invariable rule.

Treatment of the Mother.—For the mother, then, syphilis may mean all the disappointments of a thwarted and defeated maternity, and the horrors of bearing diseased and malformed children. She is herself subject to the risk of death from blood poisoning which may follow abortion. But here, as in all syphilis, early recognition and thorough treatment of the disease may totally transform the situation. In the old days of giving mercury by mouth and without salvarsan, there was little hope of doing anything for the children during the active infectious period in the mother. Now we are realizing that even while the child is in the womb the vigorous treatment of the mother may save the day for it, and bring it into the world with a fair chance for useful and efficient life. More especially is this true when the mother has been infected while carrying the child, or just before or as conception occurred. In these cases, salvarsan and mercury, carefully given, seem not only not harmful to mother and child, but may entirely prevent the child's getting the disease. For this reason every maternity hospital or ward should be in a position to make good Wassermann blood tests, conduct expert examinations, and give thorough treatment to women who are found to have syphilis. There does not seem to be any good reason why a Wassermann test should not be made part of the examination which every

intelligent mother expects a physician to make at the beginning of her pregnancy. Such a test would bring to light some otherwise undiscovered syphilis, and protect the lives of numbers of mothers and children whose health and happiness, not to say life, are now sacrificed to blind ignorance.

Effect of Hereditary Syphilis on the Unborn Child. —In the effect of hereditary syphilis on the child, we see the most direct illustration of the deteriorating influence of the disease on the race. Here again we must allow for wide variation, dependent on circumstances and on differences in the course of the disease. This does not, however, conceal the tragedy expressed in the statement that, under anything but the most expert care, more than 75 per cent of the children born with syphilis die within the first year of life. Good estimates show that more often 95 per cent than fewer of untreated children die. Such figures as those of Still are not at all exceptional —of 187 children of syphilitic parents, born or unborn, 113 were lost, whether by miscarriage, stillbirth, or in spite of treatment after they were born. It is estimated that not more than 28 per cent of syphilitic children survive their first year. Those that survive the first year seem to have a fighting chance for life. Statistics based on over 100,000 cases show that about one child in every 148 from two to twelve years of age has hereditary syphilis. Realizing the difficulty in recognizing the disease by examination alone, it is entirely safe to suppose that the actual figures are probably higher. The statis-

tics given at least illustrate how few syphilitic children survive to be included in such an estimate.

Moral Effect on the Parents.—The real extent of the damage done by the disease as a cause of death in infancy is scarcely appreciated from figures alone. There is something more to be reckoned with, which comes home to every man or woman who has ever watched for the birth of a child and planned and worked to make a place for it in the world. The loss or crippling of the new-born child jars the character and morale of the father and mother to the root. When the object of these ideals dies, something precious and irreplaceable is taken from the life of the world. The toll of syphilis in misery, in desolation, in heart-breakings, in broken bonds and defeated ideals can never be estimated in numbers or in words.

Course of Hereditary Syphilis in the Infant.—The course of syphilis in the child tends to follow certain general lines. The disease, being contracted before birth, shows its most active manifestations early in life. The stillborn child is dead of its disease. The living child may be born with an eruption, or it may not develop it for several weeks or months. It is thought by some that these delayed eruptions represent infections at birth. Hereditarily syphilitic children are filled with the spirochetes, the germs of the disease. They are in every tissue and organ; the child is literally riddled with them. In spite of this it may for a time seem well. The typical syphilitic child, however, is thin, weak, and wasted. Syphilis hastens old age even in the strong. It turns the young child into an old man or woman at birth.

The skin is wrinkled, the flesh flabby. The face is that of an old man—weazened, pinched, pathetic, with watery, bleary eyes, and snuffling nose. The mother often says that all the baby's trouble started with a bad cold. The disease attacks the throat, and turns the normal robust cry of a healthy infant into a feeble squawk. The belly may become enormously distended from enlargement of the internal organs, and the rest of the child dwindle to a skeleton. The eruptions are only a part of the picture and may be absent, but when they occur, are quite characteristic, as a rule, especially about the mouth and buttocks, and do not usually resemble the commoner skin complaints of infants. It is important to remember here that a badly nourished, sickly child with a distressing eczema is not necessarily syphilitic, and that only a physician is competent to pass an opinion on the matter. Syphilitic children in a contagious state are usually too sick to be around much, so that the risk to the general public is small. On the other hand, the risk to some woman who tries to mother or care for some one else's syphilitic child, if the disease is active, should be thoroughly appreciated. Women who are not specially trained or under the direction of a physician should not attempt the personal care of other people's sick children.

The Wet Nurse.—This is also the proper place to introduce a warning about the wet nurse. Women who must have the assistance of a wet nurse to feed their babies should, under no circumstances, make such arrangements without the full supervision of their physicians. There is no better method for

transmitting syphilis to a healthy woman than for her to nurse a syphilitic child. Conversely, the healthy child who is nursed by a syphilitic woman stands an excellent chance of contracting the disease, since the woman may have sores about the nipples and since the germs of syphilis have been found in the milk of syphilitic women. The only person who should nurse a syphilitic child is its own mother, who has syphilis and, therefore, cannot be infected. A Wassermann blood test with a thorough examination is the least that should be expected where any exchanges are to take place. Nothing whatever should be taken for granted in such cases, and the necessary examinations and questions should not give offense to either party to the bargain. Syphilis is not a respecter of persons, and exists among the rich as well as among the poor.

Hereditary Syphilis in Older Children.—Hereditary syphilis may become a latent or concealed disease, just as acquired syphilis does. None the less, it leaves certain traces of its existence which can be recognized on examination. These are chiefly changes in the bones, which do not grow normally. The shin bones are apt to be bowed forward, not sideways, as in rickets. The skull sometimes develops a peculiar shape, the joints are apt to be large, and so on. Syphilis may affect the mental development of children in various ways. Perhaps 5 per cent of children are idiots as a result of syphilis. Certain forms of epilepsy are due to syphilitic changes in the brain. On the other hand, syphilitic children may be extraordinarily bright and capable for their

years. Some are stunted in their growth and develop their sexual characteristics very late or imperfectly. It is one of the wonders of medicine to see a sickly runt of a child at fifteen or sixteen develop in a few months into a very presentable young man or girl under the influence of salvarsan and mercury. A few syphilitic children seem robust and healthy from the start. The signs of the disease may be very slight, and pass unrecognized even by the majority of physicians. Some of them may be splendid specimens of physical and mental development, but they are exceptional. The majority are apt to be below par, and nothing shows more plainly the insidious injury done by the disease than the way in which they thrive and change under treatment. Even those who are mentally affected often show surprising benefits.

Destructive Changes, Bones, Teeth, Etc.—Syphilis in children, since it is essentially late syphilis, may produce gummatous changes of the most disfiguring type, fully as extreme as those in acquired syphilis and resulting in the destruction or injury of important organs, and the loss of parts of bones, especially about the mouth and nose. Certain changes in the teeth, especially the upper incisors in the second set, are frequent in hereditarily syphilitic children, but do not always occur. These peg-shaped teeth are called Hutchinson's teeth. Individuals with hereditary syphilis who survive the early years of life are less likely to develop trouble with the heart, blood vessels, or nervous system than are those with acquired syphilis.

Eye Trouble—Interstitial Keratitis.—Two manifestations of hereditary syphilis are of obvious social importance. One of these is the peculiar form of eye trouble which such children may develop. It is known as interstitial keratitis, and takes the form of a gradual, slow clouding of the clear, transparent convex surface of the eyeball, the cornea, through which the light passes to reach the lens. While the process is active, the child is made miserable by an extreme sensitiveness to light, the eye is reddened, and there is pain and a burning sensation. When the condition passes off, the child may scarcely be able to distinguish light from dark, to say nothing of reading, finding its way about, or doing fine work. A certain amount of the damage, once done, cannot be repaired, although cases improve surprisingly if the process is still active and is properly treated. The course is slow, often a matter of years, and only too many patients do very poorly on the sort of care they can get at home. One eye case in every 180 has interstitial keratitis, according to reliable figures.* Of 152 with this trouble, only 60 per cent recovered useful eye-sight and the remaining 40 per cent were disabled partly or completely Forty-three out of 71 persons lost more or less of their capacity for earning a living. In practically all cases it means the loss of months or years of school between the ages of five and ten and a permanent handicap in later life. These patients would belong in school-hospitals, if such things existed, where they could get the elaborate treatment that might save their

* Iglesheimer, quoted by Derby.

eyes, and at the same time not come to a standstill mentally. Any chronic inflammatory eye disease in children urgently needs early medical attention, and those who know of such cases should do what they can to secure it for them.

Blindness in hereditary syphilis may, of course, take the same form that it does in the acquired disease, resulting from changes in the nerve of sight (optic nerve). This form is entirely beyond help by treatment.

Ear Trouble—Nerve Deafness.—The second important complication of hereditary syphilis is deafness. This occurs from changes in the nerve of hearing and may be present at birth or may come on many years later. The deaf infant is usually recognized by its failure to learn to talk, although it may seem perfectly normal in every other way. Again, the child may hear well at birth and deafness may come on in later life,—as late as the twentieth year,—suddenly or gradually, and become complete and permanent. It is often ascribed to colds or to falls and accidents that happen to occur at the same time. If syphilitic deafness comes on before the age of ten years, it is very apt to result in the child's forgetting how to talk, and becoming dumb as well. It goes without saying that children whose syphilis made them deaf at birth never learn to talk at all, and are therefore deaf and dumb. Very little is known about how many of the inmates of asylums for the deaf are hereditary syphilitics, but there is reason to suspect the percentage to be rather large. Deafness in

hereditary syphilis is practically uninfluenced by treatment.

Accident and Injury in Hereditary Syphilis.—It is a matter of great importance to realize the large part played by accidents, injury, poor health, or lowered resistance in bringing a hidden hereditary syphilis to the surface. A child may show no special signs of the disease until some time during its childhood it has a fall which injures or bruises a bone or breaks a limb. Then suddenly at the place where the injury was done a gumma or tertiary syphilitic change will take place and the bone refuses to heal or unite or a large sore may develop which may be operated on before the nature of the condition is realized. In the same way a woman with hereditary syphilis may seem in perfect health, marry, and suddenly after the birth of her first child, even as late as her twenty-fifth year, may develop syphilitic eye trouble. It must be realized that hereditary syphilis is as treacherous as the acquired disease, and can show as little outward signs before a serious outbreak. It is part of the duty of every person who suspects syphilis in his family or who has it himself to let his physician know of it, for the sake of the help which it may give in recognizing obscure conditions in himself or his children.

Marriage and Contagion in Hereditary Syphilis.—In general it may be said that, in the matter of marriage, persons who have hereditary syphilis and live to adult life with good general health can, after reasonable treatment, marry without fear of passing on the disease. Hereditary syphilis apparently is

not transmitted to the children as acquired syphilis is. Hereditary syphilis practically is not contagious except during the eruptions and active manifestations in infancy, such as the nasal discharge and the other sores in the mouth and about the genitals. As adults they can enter into the intimate relations of life without risk. Many of them, while perhaps having positive blood tests while the disease is active, later become negative without treatment. Some of them even recover from the disease to the extent that they can acquire it again, since there is no absolute immunity.

Syphilis in Adopted Children.—A word might well be said at this point on the adoption of children with hereditary syphilis. In all probability this is not a common occurrence, certain factors tending to diminish the risk. A child adopted after its second year will not be so likely to have the disease, since most syphilitic children die before this age is reached. Agencies which arrange for the adoption of children are now much more careful about the matter than formerly, and a Wassermann test on the mother and also on the child, as well as a careful history in the case of the mother, is frequently available. The information in regard to the mother is quite as important as that about the child, since the child may have a negative test while the mother's may be positive. Children who have hereditary syphilis, even in latent form, should not be offered for adoption, and should become a charge upon the state. Families in which it later develops that an adopted child was syphilitic should not, however, be need-

lessly alarmed for their own safety, since, from the standpoint of infectiousness, the late forms of hereditary syphilis are not dangerous to others. The agency from which the child was adopted should assume responsibility for the child if the family cannot meet the situation. The state of Michigan has been a pioneer in this country in legislation which provides for the welfare of these children among others. A law has been enacted making it possible to provide for their medical treatment for an indefinite period in the state hospital at Ann Arbor, at the cost of the state.

Treatment of Hereditary Syphilis.—The question of the treatment and cure of a person with hereditary syphilis is in many respects a different one from that in an acquired case. The foothold which the germ has in the body in hereditary syphilis is stronger even than in an untreated acquired case. Many of the changes produced by it are permanent, and the prospects of completely eradicating it are correspondingly small. On the other hand, the child who survives hereditary syphilis has probably an enormous resistance to the disease, which in a measure compensates for the hold which it has on him. Treatment in hereditary syphilis becomes an extremely difficult problem because it must in many cases be carried out during infancy, and for that reason the coöperation of the patient cannot be secured. By treating the mother, we now know that we can accomplish a great deal for the unborn child. Once the child is born, its salvation will depend on unremitting care and labor. If it is skilfully treated

and kept at the breast, it is estimated that it has even as high as ninety chances in one hundred of surviving to a useful life. Salvarsan can be given to even very small babies, and mercury also is employed with excellent results. Persistence and skill are essential, and for that reason, if possible, hereditary syphilis in active form in later childhood should have the advantage of occasional or prolonged treatment in special hospitals or sanitariums where the child could go to school while he is being built up and cared for. This is not like trying to salvage wreckage. Many syphilitic children are brilliant, and if treated before they are crippled by the disease, give every sign of capacity and great usefulness to the world. Welander, who was one of the greatest of European experts on syphilis, has left himself an enduring monument in the form of the so-called Welander homes, which have been established by cities like Copenhagen, Berlin, and Vienna to provide for such children the combined benefits of the school and the hospital. We cannot be too prompt in adopting similar provision for such cases in this country. There can be little excuse, eugenic or otherwise, for not doing the utmost that modern medical science is capable of for their benefit.

Chapter XI

The Transmission and Hygiene of Syphilis

The problem of the control of syphilis as a contagious disease is the least appreciated and the most important one in the whole field. It should be the key to our whole attitude toward the disease, and once given its rightful place in our minds, will revolutionize our situation with regard to it. For that reason, while some repetition of what has gone before may be unavoidable, it will be worth while to gather in one chapter the details relating to the question of how the disease is spread about.

Two bed-rock facts stand out as the basis for the whole discussion. First, for practical purposes syphilis is contagious only in the primary and secondary stages. Second, syphilis is transmitted only by open sores or lesions whose discharges contain the germs, or by objects which are contaminated by those discharges. Infection with syphilis by such fluids as the blood, milk, or spermatic fluid uncontaminated by contact with active lesions is at least unusual.

Contagiousness in the Primary Stage.—The chancre is always contagious. If it is covered with a dry crust, it is, of course, less so, but as soon as the crust is rubbed off, the germ-infested surface is exposed and the thin, watery discharge contains immense

numbers of the organisms, especially in the first two or three weeks. This is just as true of a chancre on the lip or chin as on the genitals. Chancres which are in moist places, as in the mouth, or on the neck of the womb, or under the foreskin, are especially dangerous, because the moisture keeps the germs on the surface.

Contagiousness in the Secondary Stage.—In the secondary period, when the body is simply filled with germs, one would expect the risk to be even greater than in the primary stage. As a matter of fact, however, no matter how many germs there are in the body, the only ones that are dangerous to others are those that are able to get to the surface. A syphilitic nodule or hard pimple on the hand or face is not contagious so long as the skin is dry and unbroken over it. The sores which occur in the moist, warm, protected places, like the mouth, on the lips, about the genitals, and in the folds of the body, such as the thighs, groins, armpits, and under the breasts in women, are, like the chancre, the real sources of danger in the spread of the disease.

Relatively Non-contagious Character of Late Syphilis.—The older a syphilis is, the less dangerous it becomes. It is the fresh infection and the early years which are a menace to others. It will be recalled that the germs die out in the body in immense numbers after the active secondary period is over, so that when the tertiary stage is reached, there is only a handful left, so to speak. The germs in a tertiary sore are so few in number that for practical purposes it is safe to say they may be disregarded, and that

for that reason late syphilis is practically harmless for others. Just as every syphilitic runs a gradual course to a tertiary period, so every syphilitic in time becomes non-contagious, almost regardless of treatment.

The Time Element in Contagiousness.—It is the time that it takes an untreated case to reach a non-infectious stage and the events or conditions which can occur in the interval, that perpetuate syphilis among us. The chancre is contagious for several weeks, and few syphilitics escape having some contagious secondary lesions the first year. These are often inconspicuous and misunderstood. They may be mistaken for cold sores or the lesions about the opening of the rectum may be mistaken for hemorrhoids, or piles. The recurrence of these same kinds of sores may make the patient dangerous from time to time to those about him, without his knowledge. It is an unfortunate thing that the most contagious lesions of syphilis often give the patient least warning of their presence in the form of pain or discomfort. While they can often be recognized on sight by a physician, it is sometimes necessary to examine them with a dark-field microscope to prove their character by finding the germs. It is a safer rule to regard every open sore or suspicious patch in a syphilitic as infectious until it is proved not to be so.

Contagious Recurrences or Relapses.—The duration of the infectious period in untreated cases and the proportion of infectious lesions in a given case vary a good deal and both may be matters of the utmost importance. Some persons with syphilis

may have almost no recognizable lesions after the chancre has disappeared. Others under the same conditions may have crop after crop of them. There is a kind of case in which recurrences are especially common on the mucous or moist surfaces of the mouth and throat, and such patients may hardly be free from them or from warty and moist growths about the genitals during the first five years of the disease, unless they are continuously and thoroughly treated. Irritation about the genitals and the use of tobacco in the mouth encourage the appearance of contagious patches. Smokers, chewers, persons with foul mouths and bad teeth, and prostitutes are especially dangerous for these reasons.

Average Contagious Period.—It is a safe general rule, the product of long experience, to consider a person with an untreated* syphilis as decidedly infectious for the first three years of his disease, and somewhat so the next two years. The duration of infectiousness may be longer, although it is not the rule. It must be said, however, that more exact study of this matter since the germ of syphilis was discovered has tended to show that the contagious period is apt to be longer than was at first supposed, and has taught us the importance of hidden sores in such places as the throat and vagina.

Individual Resistance to Infection.—The contagiousness of untreated syphilis is influenced by two other factors besides the mere lapse of time. The first of these is the resistance or opposition

* The control of infectiousness in syphilis through treatment is considered in the next chapter.

offered to the germ by the person to whom the infection is carried. The second is the feebleness of the germ itself, and the ease with which it dies when removed from the body. In regard to the first of these factors, while natural resistance to the disease in uninfected persons is an uncertain quantity, it is very probable that it exists. It is certain that the absence of any break in the skin on which the germs are deposited makes a decided difference if it does not entirely remove the risk of infection. A favorable place for the germ to get a foothold is a matter of the greatest importance. When, however, it is remembered that such a break may exist and not be visible, it is evident that little reliance should be placed on this factor in estimating the risk or possibility of infection.

Transmission by Infected Articles.—The feebleness of the germ and the ease with which it is destroyed are its redeeming qualities. This is of special importance in considering transmission by contact with infected articles. Nothing which is absolutely dry will transmit syphilis. Moisture is necessary to infection with it, and only articles which have been moistened, such as dressings containing the discharges, and objects, such as cups, eating utensils, pipes, common towels, and instruments which come in contact with open sores or their discharges, are likely to be dangerous. Moreover, even though these objects remain moist, the spirochetes are likely to die out within six or seven hours, and may lose their infectiousness before this. Smooth, non-absorbent surfaces, especially of metal, are unfavorable

for the germ. Wash-basins, dishes, silverware, and toilet articles are usually satisfactorily disinfected by hot soapsuds, followed by drying. Barbers, dentists, nurses, and physicians who take care at least to disinfect instruments and other objects brought into contact with patients with carbolic acid and alcohol will never transmit syphilitic infection to others. Toilet-seats, bath-tubs, and door-knobs, although theoretically dangerous, are practically never so, and syphilitic infection transmitted by them can be dismissed as all but unknown. This is in marked contrast to gonorrhea, which in the case of little girls can be transmitted apparently by toilet-seats. Much depends, as has been said, on placing the germ on a favorable ground for inoculation, and the bare skin, unless the virus is massaged or rubbed in, is certainly not a favorable situation. Many experts do not hesitate to handle infectious lesions with the fingers provided the skin is not broken, relying simply on the immediate use of soap and water, and perhaps alcohol, to remove the germ. While this may be a risk, it should, none the less, reassure those who are inclined to an unreasoning terror of infection whenever they encounter the disease.

Transmission Under the Conditions of Every-day Life.—The question of just how dangerous the worker with foodstuffs may be to others when he has active contagious lesions is unsettled. Recent surveys of various types of workers have tended to show that syphilis in transmissible form is not especially prevalent among them. The same general principle applies here as elsewhere. The risk of infection

with syphilis increases with dirty and unsanitary conditions, and becomes serious when there is opportunity for moist materials to be transferred to sensitive surfaces, like the mouth, sufficiently soon after they have left the syphilitic person for the germs to be still alive. That the real extent of the risk is not known does not make it any the less important that persons who have opportunity to handle materials in which this may occur should be subject to frequent sanitary inspection. Restaurants in which the silverware is not properly cleaned, and is used over and over at frequent intervals, and in which there is a careless and unsanitary type of personal service, can hardly be regarded as safe. While there is no need for hysterical alarm over such possibilities, it is just as well to provide for them. Crowding, close quarters, and insufficient sanitary conveniences in stores and offices, in restaurants or tenements, provide just the conditions in which accidental infection may occur. A gang of men with a common bucket and drinking cup may be at the mercy of syphilis if one member is in a contagious condition. A syphilitic might cough into the air with little risk, since the germs would die before they could find a favorable place to infect. But a syphilitic who coughs directly into one's face with a mouth full of spirochetes multiplies the risk considerably. The public towel is certainly dangerous—almost as much so as the common drinking cup. The possibility of syphilitic infection by cutting the knuckle of the hand against the teeth of an opponent in striking a blow upon his mouth should not be overlooked, and the occurrence

is common enough for this type of chancre to have received the special name of brawl, or fist, chancre.

Accidental Syphilis in Physicians and Nurses.—Another type of infection ought not to go unmentioned—that to which physicians and nurses are exposed in operating on or handling patients with active syphilis. Before the day of rubber gloves such things were much more common perhaps than they are now, yet they are common enough at the present time. Most of the risk occurs in exploring or working in cavities of the body containing infected discharges. The blood may become infected in passing over active sores. The risk from all these sources is so considerable that it is justifiable as a measure of protection to a hospital staff to take a blood test on every patient who applies for treatment in a hospital, to say nothing of the advantage which this would be to the patient.

Transmission by Intimate Contacts—Kissing.—As we pass from the less to the more intimate means of contact between the syphilitic person and others, the risk of transmitting syphilis may be said to increase enormously. The fundamental conditions of moisture, a susceptible surface, protection of the germ from drying and from air, and possibly also massage or rubbing, are here better satisfied than in the risks thus far considered. Kissing, caresses, and sexual relations make up the origin of an overwhelming proportion of syphilitic infection. Infections are, of course, traceable to the nursing of syphilitic infants. It is through these sources of contact that syphilis invades the family especially. Many a

syphilitic who realizes that he should not have sexual relations with his wife while he has the disease in active form will thoughtlessly infect her or his children by kissing. Kissing games are potentially dangerous, and a classical example of this danger is that of a reported case* in which a young man in Philadelphia infected seven young girls in one game, all of whom developed chancres on the lips or cheeks. It is no great rarity to find a syphilis dating from a sore on the lip that developed while a young couple were engaged. Certainly the indiscriminate kissing of strangers is as dangerous an indulgence as can be imagined. Syphilis does not by any means invariably follow a syphilitic's kiss, but the risk, although not computable in figures, is large enough to make even the impulsive pause. The combination of a cold sore or a small crack on the lip of the one and a mucous patch inside the lip of the other brings disaster very near. Children are sometimes the unhappy victims of this sort of thing, and it should be resented as an insult for a stranger to attempt to kiss another's child, no matter on what part of the body. It would be easy to multiply instances of the ways in which syphilis may be spread by the careless or ignorant in the close associations of family life, but little would be accomplished by such elaboration that would not occur to one who took the trouble to acquaint himself with the principles already discussed.

The Sexual Transmission of Syphilis.—The sexual

* Schamberg, J. F.: "An Epidemic of Chancres of the Lip from Kissing," Jour. Amer. Med. Assoc., 1911, lvii, 783.

transmission of syphilis is beyond question the most important factor in the spread of the disease. Here all the essential conditions for giving the germ a foothold on the body are satisfied. The genitals are especially fitted to keep the germs in an active condition because of the ease with which air is excluded from the numerous folds about these parts. It is remarkable what trifling lesions can harbor them by the million, and how completely, especially in the case of women, syphilitic persons may be ignorant of the danger for others. Sexual transmission of syphilis is simply a physiologic fact, and in no sense to be confounded with questions of innocence and guilt in relation to the acquiring of the disease. A chancre acquired from a drinking cup or pipe may be transmitted to husband or wife through a mucous patch on the genitals and to children through an infected mother, without the question of innocence or guilt ever having arisen. On the other hand, chancres on parts other than the genitals may be *acquired in any but innocent ways*. It is impossible to be fair or to think clearly so long as we allow the question of innocence or guilt to color our thought about the genital transmission of syphilis. That syphilis is so largely a sexually transmitted disease is an incidental rather than the essential fact from the broadly social point of view. We should recognize it only to the extent that is necessary to give us control over it—not allow it to hold us helplessly in its grip because we cannot separate it from the idea of sexual indiscretion. There is a form of narrow-minded self-righteousness about these things that

sets the stamp of vice on innocent and guilty alike simply on the strength of the sexual transmission of syphilis. In the effort to avoid so mistaken and heartless a view, we cannot remind ourselves too often that syphilis is a disease and not a crime, and as such must be approached with the impulse to heal and make whole, and not to heap further misfortune on its victim or take vengeance on him.

Extragenital and Marital Syphilis.—Estimates of the ratio of genital to non-genital or so-called extragenital infection in syphilis vary a good deal, and are largely the products of the clinical period in the history of the disease before the days of more exact methods of detecting its presence. The older statistics estimate from 5 to 10 per cent of all syphilitic infections to be of non-genital origin, while the remaining 90 per cent are genital. As we become better able to recognize hidden syphilis, we shall probably find that the percentage of non-genital infections will increase.

The physician's suspicions are easily aroused by a genital sore, less so by one on the lip or the tonsil, for example. The same thing is true of the layman. Syphilis which starts from a chancre elsewhere than on the genitals runs the same course and may conceal itself quite as effectively as syphilis from the usual sources, and for that reason may even more easily escape notice because misinterpreted at the start. It is my personal impression that careful study of patients with syphilis, and of those who live with them, would bring to light many overlooked extragenital infections, especially among those who

are the victims of crowding, poor living conditions, and ignorance. Estimates on the amount of syphilis which is contracted in marriage are apt to be largely guesswork in the absence of reliable vital statistics on the disease. Fournier believed that 20 per cent of syphilis in women was contracted in marriage. So much syphilis in married women is unsuspected, and so little of what is recognized is traceable to outside sources, that 50 per cent seems a nearer estimate than twenty.

Chapter XII

The Transmission and Hygiene of Syphilis (Continued)

The Control of Infectiousness in Syphilis.—Syphilis and Marriage

Means for Controlling Infectiousness.—The usual method of controlling a very contagious disease, such as scarlet fever or measles, is to put the patient off by himself with those who have to care for him and to keep others away—that is, to quarantine them. This works very well for diseases which run a reasonably short course, and in which contagious periods are not apt to recur after the patient has been released. But in diseases such as tuberculosis and syphilis, in which contagiousness may extend over months and years, such a procedure is evidently out of the question. We cannot deprive a patient of his power to earn a living, to say nothing of his liberty, without providing for his support and for that of those who are dependent on him. To do this in so common a disease as syphilis would involve an expenditure of money and an amount of machinery that is unthinkable. Accordingly, as a practical scheme for preventing its spread, the quarantine of syphilis throughout the infectious period is out of the question. We must, therefore, consider the other

two means available for diminishing the risk to others. The first of these, and the most important, is to treat the disease efficiently right from the start, so that contagious sores and patches will be as few in number as possible, and will recur as little as possible in the course of the disease. This will be in effect a shortening of the contagious period, and should be recognized as one of the great aims of treatment. The second means will be to teach the syphilitic and the general public those things which one who has the disease can do to make himself as harmless as possible to others. This demands the education of the patient if we hope for his coöperation, and demands also the coöperation of those around him in order that the pressure of public sentiment may oblige him to do his part in case he does not do it of his own free will.

Control of Infectiousness by Treatment—Importance of Salvarsan.—In a disease which yields so exceptionally well to treatment as syphilis, a great deal can be done to shorten the contagious period. Especially is this so when we are able to employ an agent such as salvarsan, which kills off the germs on the surface within twenty-four hours after its injection. When a patient is discovered to be in a contagious state, in a large majority of cases the risk to the community which he represents can be quickly eliminated, at least for the time being. Combining the use of mercury and salvarsan in accordance with the best modern standards, the actively contagious period as a whole can be reduced in average cases from a matter of years to one of a few weeks or

months. Certainly, so far as recognizable dangerous sores are concerned, periodic examination, with salvarsan whenever necessary, would seem to dispose of much of the difficulty.

Obstacles to Control by Treatment.—There are, however, obstacles in the way of complete control of infectiousness by treatment. For example, one might ask whether a single negative blood test would not be sufficient assurance that the patient was free from contagious sores. It is, however, a well-recognized fact that a person with syphilis may develop infectious sores about the mouth and the genitals even while the blood test is negative. An examination, moreover, is not invariably sufficient to determine if a patient is in a contagious state. The value of an examination depends, of course, entirely on its thoroughness and on the experience of the physician who makes it. It is only too easy to overlook one of the faint grayish patches in the mouth or a trifling pimple on the genitals. The time and special apparatus for a microscopic examination are not always available. Moreover, contagious lesions come and go. One may appear on the genitals one day and a few days later be gone, without the patient's ever realizing that it was there—yet in this interval a married man might infect his wife by sexual contact. The patient with a concealed syphilis often lacks even the incentive to seek examination by a doctor. It is important also to realize that when mercury has to be the only reliance, the risk of infection cannot be entirely controlled by treatment. Contagious sores may develop even

during a course of mercurial injections, especially in early cases. It requires the combination of mercury and salvarsan to secure the highest percentage of good results.

The Five-year Rule.—The truth of the matter is that, as Hoffmann says, no treatment can *guarantee* the non-infectiousness of a syphilitic in the first five years of his disease. Time is thus an essential element in pronouncing a person non-infectious and hence in deciding his fitness for marriage, for example. The person with active syphilis who has intimate relations with uninfected persons, who will not abandon smoking or take special precautions about articles of personal use which are likely to transmit the disease, is unsafe no matter what is done for him. In spite of this qualifying statement it may be reiterated, however, that good treatment with salvarsan and mercury reduces the risk of infecting others in the ordinary relations of life practically to the vanishing point, and of course reduces, but not entirely eliminates, the dangers of the intimate contacts.

Personal Responsibility of the Patient.—If we are compelled then to fall back to some extent upon the personal sense of responsibility of the patient himself to fill in the gap where treatment does not entirely control the situation, it becomes increasingly important that in the irresponsible and ignorant, when the patient fails to meet his obligation, we should push treatment to the uttermost in our effort to prevent the spread of the disease. To supply this necessary treatment to every syphilitic who

cannot afford it for himself, and make it obligatory, if need be, will be a long step forward in the control of the disease. The educational campaign for it is well under way all over the world, and the money and the practical machinery will inevitably follow. We have the precedents of the control of tuberculosis, smallpox, malaria, and yellow fever to guide us, to say nothing of a practical system against sexual disease already in operation in Norway, Sweden, Denmark, and Italy.

Syphilis and Marriage.—The problem of the relation of syphilis to marriage is simply an aspect of the transmission of an infectious disease. The infection of one party to the marriage by the other and the transmission of that infection to children summarizes the social problem. Through the intimate contacts of family life, syphilis attacks the future of the human race.

Estimated Risk of Infecting the Wife.—How serious is the risk of infecting the wife if a man should marry during the contagious period of syphilis? This will depend a good deal on the frequency of relapses after the active secondary stage. On this point Sperk estimated that in 1518 patients, only ten escaped relapses entirely. These were, however, not patients that had been specially well treated. Keyes, quoted by Pusey, estimated, on the basis of his private records, that the chances taken by a syphilitic husband who used no special precautions to prevent infecting his wife were twelve to one the first year in favor of infection, five to two the second

year, and one to four the third year, being negligible after the fourth year.

Syphilis in the Father.—Even while we recognize the infection of women and children as the greatest risk in marriage we should not lose sight of the cost to society which syphilis in the father of the family himself may entail. For such a man to be stricken by some of the serious accidents of late syphilis throws his family as well as himself upon society. A syphilitic infection which has not been cured not only makes a man a poor risk to an insurance company, but a poor risk to the family which has to look to him for support and for his share and influence in the bringing up of the children. A sufficient number of men and women in the thirties and forties are crippled, made dependent, or lost to the world entirely, to make the responsibilities of the family when assumed by persons with untreated or poorly treated syphilis a matter of some concern, whether or not they are still able to transmit the disease to others.

The Time-treatment Principle and the Five-year Rule.—In setting a modern standard for the fitness of syphilitics for marriage it may be said at the outset that there is little justification for making the mere fact of a previous syphilitic infection a permanent bar in the majority of cases. The risk of economic disaster to the parent and wage-earner, and the risk of transmission of the disease to the partner and the children, are both controllable by a combination of efficient treatment and time. The man who has conformed to the best practice in both particu-

lars may usually marry and have healthy children. The woman under the same circumstances need not fear that the risk of having offspring injured by her disease is any greater than the risk that they will be injured by any other of the unforeseen risks that surround the bringing of a child into the world. A vast experience underlies what might be called the time-treatment principle on which permission to marry after syphilis should be based. It has recently been ably summarized again, and with commendable conservatism, by Hoffmann in the rule that a syphilitic who has been efficiently treated by modern standards, with mercury and salvarsan, over a period of two to three years, and who has remained free from all symptoms and signs of the disease for two years after all treatment was stopped, including negative blood and spinal fluid tests, may marry in from four to five years from the beginning of his infection. Variations of this rule must be allowed only with great conservatism, since salvarsan, on whose efficiency many pleas for a shortening of probation have been based, is still too recent an addition to our implements of warfare to justify a rash dependence upon it. The abortive cure in relation to marriage is a problem in itself, and the shortening of time allowed in such cases must be individually determined by an expert who has had the case in charge from the beginning, and not, at least as yet, by the average doctor. Such a standard as this for the marriage of persons who have had syphilis steers essentially a middle course between those who condemn syphilitics to an unreasonable and needless

deprivation of all the joys of family life, and those who are too ready to take our conquest of syphilis for granted and to cast to the winds centuries of experience with the treachery of the disease.

Even while we concede the value of generations of experience with syphilis in determining the probable risk of infection, it is a duty to investigate thoroughly by the modern methods, such as the Wassermann blood test, the condition of all members of a family in which syphilis has appeared. This means, for example, that even though the husband with syphilis may have married years after the usual period of infectiousness has passed, his wife, though outwardly healthy, should have a Wassermann test, and his children would be none the worse for an examination, even though they seem normal. Syphilis is an insidious disease, a consummate master of deceit, able to strike from what seems a clear sky. The latest means for its recognition have already revolutionized some of our conceptions of its dangers and its transmission. It is only common prudence to take advantage of them in every case, to forestall even the remotest possibility of mistake or oversight.

Where both husband and wife have had syphilis, even though both are past the infectious stage, both should be treated, and a complete cure for the wife is advisable before they undertake to have children. This must mean an added burden of responsibility on both physician and patient, and one extremely difficult to meet under existing conditions. A reliable means of birth control used in such cases would place the problem in women on a par with that in

men, and give the physician's insistence on a complete cure for the woman a reasonable prospect of being needed. Where his advice is disregarded and a pregnancy results, the woman should be efficiently treated while she is carrying the child.

Syphilis and Engagements to Marry.—If a five-year rule is to be applied to marriage, a similar rule should cover the engagement of a syphilitic to marry, and it should cover the sexual relations of married people who acquire syphilis. It is not too much to expect that an engaged person who contracts syphilis shall break his engagement, and not renew it or contract another until by the five-year rule he would be able to marry with safety.

Engagements nowadays may well be thought of as equivalent to marriage when the question of syphilis is considered. They not infrequently offer innumerable opportunities for intimacies which may or may not fall short of actual sexual relations. Attention has been called to this situation by social workers among wage-earning girls. It has been a distressingly frequent experience in my special practice to find that the young man, overwrought by the excitement of wooing, has exposed himself elsewhere to infection and unwittingly punished the trustfulness of his fiancée by infecting her with syphilis through a subsequent kiss. The publication of banns before marriage is worth while, and unmistakable testimony as to the character and health of the parties concerned might well be exchanged before a wooing is permitted to assume the character of an engagement. It is of little use to say that a Wasser-

mann and a medical examination should be made before marriage, when the damage may be done long before that point is reached.

Medical Examination for Syphilis Before Marriage.—How shall we recognize syphilis in a candidate for marriage? The prevailing idea is to demand a negative Wassermann test. Assuredly this is good as far as it goes, but it is not so reliable as to deserve incorporation into law as sole sufficient evidence of the absence of syphilis, as has been done in one state. From what has been said, it is plain that a single negative Wassermann is no proof of the absence of syphilis. The subject must be approached from other angles, and when syphilis may be suspected, the question should be decided *by an expert.* A thorough general or physical examination is desirable, and if this reveals suspicious signs, such as scars, enlarged glands, etc., it is then possible to investigate the Wassermann report more thoroughly, by repeating the test, sending it to another expert for confirmation. In some cases it may even be necessary to insist that the patient submit to a special test, called the provocative test, in which a small injection of salvarsan is used to bring out a positive blood test if there is a concealed syphilis. These are, of course, measures which are seldom necessary except in patients who have had the disease. Much depends on the attitude of the patient toward the examination and his willingness to cooperate. A resourceful physician can usually settle the question of a person's fitness for marriage, and

the result of a reliable examination offers a reasonable assurance of safety.

Laws Crippling Physicians in Such Matters.—What shall the physician do when confronted with positive evidence that a patient who is about to marry has an active syphilis? It is important for laymen to understand that the law relating to professional confidence between physician and patient ties the hands of the physician in such a situation. For the doctor to tell the relatives of the healthy party to such an intended marriage that the other has active syphilis would make him subject to severe penalties in many states for a violation of professional confidence, or to suit for libel. Of course, if the patient has agreed to submit to examination to determine his fitness for marriage, the physician's path is clear, but if the condition is discovered in ordinary professional relations, there is nothing to be done except to try to persuade the patient not to marry—advice he usually rejects. To this blind policy of protecting the guilty at the expense of the innocent an immeasurable amount of human efficiency and happiness has been sacrificed. Fortunately there are signs of an awakening. For example, Ohio has recently amended the law so as to permit a physician to disclose to the parties concerned that a person about to be married has a venereal disease (Amendment to Section 1275, General Code, page 177). This is preventive legislation, as distinguished from the old policy of locking the stable door after the horse was stolen by laws punishing one who infects another with a venereal

disease after marriage has been contracted. Recent Supreme Court decisions (Wisconsin) have also taken the ground that a venereal disease existing at the time of marriage and concealed from the other party is ground for annulment of the marriage, provided the uninfected party ceases to have marital relations as soon as the fact is discovered.

The problem of syphilis in its relation to marriage is, of course, a serious one. It is safe to say that it will never be completely met except by a vigorous general public program against syphilis as a sanitary problem. It is by no means so serious, however, that it need lead clean young men and women to remain single for fear they will encounter it. The medical examination of both parties before marriage, efficiently carried out by disinterested experts, each perhaps of the other's appointing, is the best insurance a man and woman can secure at the present day against the risk that syphilis will mar their happiness.*

* The problem of gonorrhea is not considered in the framing of this statement.

Chapter XIII

The Transmission and Hygiene of Syphilis (Continued)

Syphilis and Prostitution

In taking up the consideration of the relation of syphilis to illicit sexual relations, we must again remind ourselves that we are approaching this subject, not as moralists, important though their point of view may be, but for the time being as sanitarians, considering it from the standpoint of a method of transmission of a contagious disease.

Genital and Non-genital Syphilis in Lax Individuals.—The prevalence of syphilis among women who receive promiscuous attentions is enormous. It is practically an axiom that no woman who is lax in her relations with men is safe from the danger of the disease, or can long remain free from it. The type of man who is a Light o' Love does not go far before he meets the partner who has been infected by some one else. Becoming infected himself, he passes on his infection to his next partner. Syphilis is not so often transmitted in prostitution, open or secret, as gonorrhea, but it is sufficiently so to make the odds overwhelmingly against even the knowing ones who hope to indulge and yet escape. The acquiring of syphilis from loose men or women is

usually thought of as entirely an affair of genital contacts. Yet it is notable that extra-genital chancres are the not uncommon result of liberties taken with light women which do not go to the extent of sexual relation. Women who accept intimacies of men who, while unwilling to commit an outright breach of decency, will take liberties with a woman who will accept them have only themselves to blame if it suddenly develops that the infection has been transmitted from one to the other by kisses or other supposedly mild offenses against the proprieties.

Syphilis Among Prostitutes.—As to the prevalence of syphilis among both public and clandestine or secret prostitutes, several notable surveys of more or less typical conditions have been made. With the aid of the Wassermann test much heretofore undiscovered syphilis has been revealed. Eighty to 85 per cent of prostitutes at some time in their careers acquire the disease.* About half this number are likely to have active evidence of the disease. Thirty per cent of the prostitutes investigated by Papee in Lemberg were in the most dangerous period—the first to the third year of the disease. Three-fourths of these dangerous cases were in women under twenty-five years of age—in the most attractive period of their lives. Averaging a number of large European cities, it was found that not more than

* The figures here given are based on those of Papee, Wwednesky, Raff, Sederholm, and others. The recently published investigations of the Baltimore Vice Commission showed that 63.7 per cent of 289 prostitutes examined by the Wassermann test had syphilis. Of 266 examined for gonorrhea, 92.1 per cent showed its presence. Nearly half the girls examined had both diseases and only 3.39 per cent had neither. (Survey, March 25, 1916, Vol. 35, p. 749.)

40 per cent of prostitutes were even free of the outward signs of syphilis, to say nothing of what laboratory tests might have revealed. It is more than evident that prostitution is admirably fitted to play the leading rôle in the dissemination of this disease. The young and attractive prostitute, whether in a house of ill-fame, on the street, or in the more secret and private highways and by-ways of illicit sexual life, is the one who attracts the largest number with the most certain prospect of infecting them.

Concealed Syphilis and Medical Examinations of Prostitutes.—A number of delusions center around the relation of open and secret prostitution to disease. From the description of syphilis given in the foregoing pages, it must be apparent how little reliance can be placed, for example, on the ordinary medical examination of prostitutes as practised in segregated districts. The difficulties of efficient examination are enormous, especially in women. Even with the best facilities and a high degree of personal skill, with plenty of time and laboratory help in addition, extremely contagious syphilis can escape observation entirely, and even the negative result of one day's examination may be reversed by the appearance of a contagious sore on the next. Women can transmit syphilis passively by the presence of infected secretions in the genital canal even when they themselves are not in a contagious state. In the same way a woman may find herself infected by a man without any idea that he was in an infectious state. She may in turn develop active syphilis without ever realizing the fact. Medical

examination of prostitutes as ordinarily carried out does actual harm by deluding both the women and their partners into a false sense of security. The life which such women lead, with the combination of local irritation, disease, and fast living, makes them especially likely to develop the contagious mucous patches, warts, and other recurrences, and to relapse so often that there can be little assurance that they are not contagious all the time.

Under such circumstances one might almost expect every contact with a prostitute on the part of a non-syphilitic individual to result in a new infection. The factors which interfere to prevent such wholesale disaster are the same which govern infectiousness throughout the disease. Local conditions may be unfavorable, even though the germs are present, or there may be no break in the skin for the germs to enter. If the syphilitic individual is beyond the infectious period, there may be no dangerous lesions. Here, as all through the history of infections with syphilis, there is an element of the unexpected, a favoring combination of circumstances. Sometimes when infection is most to be expected it is escaped, and conversely it seems at times that in the "sure thing," the "safe chance," and the place where infection seems most improbable, it is most certain to occur.

Personal Hygiene in Syphilis

Syphilis is a constitutional disease, affecting in one way or another the whole body. For that reason, measures directed to improving the general

health and maintaining the resistance of the patient at the highest point have an important place in the management of the disease. By his habits and mode of life a person with syphilis does much to help or hinder his cure, and to protect or endanger those around him. For that reason a statement of general principles may well be drawn up to indicate what is desirable in these regards.

A Well-balanced Life.—First, for his own sake, a syphilitic should live a well-balanced and simple life so far as possible. In this disease the organs and structures of the body which are subject to greatest strain are the ones most likely to suffer the serious effects of the disease. Worry and anxiety, excessive mental work, long hours without proper rest, strain the nervous system and predispose it to attack. Excessive physical work, fatigue, exhaustion, poor food, bad air, exposure, injure the bodily resistance. Excesses of any kind are as injurious as deprivation. In fact, it is the dissipated, the high livers, who go to the ground with the disease even quicker than those who have to pinch.

Alcohol.—Alcohol in any form, in particular, has been shown by extensive experience, especially since the study of the nervous system in syphilis has been carried to a fine point, to have an especially dangerous effect on the syphilitic. Alcohol damages not only the nervous system, but also the blood vessels, and makes an unrivaled combination in favor of early syphilitic apoplexy, general paresis, and locomotor ataxia. A syphilitic who drinks at all is a bad risk, busily engaged in throwing away his chances

of cure. Even mild alcoholic beverages are undesirable and the patient should lose no time in dropping them entirely.

Tobacco.—Tobacco has a special place reserved for it as an unfavorable influence on the course of syphilis. It is dangerous to others for a syphilitic to smoke or chew because, more than any other one thing, it causes the recurrence of contagious patches in the mouth. It is remarkable how selfish many syphilitic men are on this point. In spite of the most positive representations, they will keep on smoking. Not a few of them pay for their selfishness with their lives. These mucous patches in the mouth, often called "smoker's patches," predispose the person who develops them to one of the most dangerous forms of cancer, which is especially likely to develop on tissues, like those of the mouth and tongue, which have been the seat of these sores.

Sexual Relations, Kissing, Etc.—Contagious Sores.—Sexual indulgence, kissing, and other intimate contacts during the active stage of syphilis, as has been indicated, directly expose others to the risk of getting the disease. For that reason they should not be indulged in during the first two years of the average well-treated case receiving salvarsan and mercury by the most modern methods. Exceptions to this rule should be granted only by the physician, and should be preceded by careful and repeated examination in connection with the treatment. Under no circumstances should a patient kiss or have intercourse if there is even the slightest sore or chafe on the parts, regardless of whether or not it is thought to be syphilitic.

Articles of Personal Use.—Persons with a tendency to recurrences in the mouth or elsewhere should report to the physician any sore they may discover and should watch for them. Persons with syphilitic sores in the mouth or elsewhere should have their own dishes, towels, toilet articles, shaving tools, pipes, silverware, and personal articles, and should not exchange or permit others to use them.

Secrecy.—Professional secrecy is something to which the syphilitic is most certainly entitled when it can be had without danger to the public health. So long as a syphilitic in the contagious period carefully observes the principles which ought to govern him in his relations to others, his condition is his own concern. But there is one person within the family who should, as a rule, know of his infection if it is still in the contagious period, since it is almost impossible to secure coöperation otherwise. No matter how painful it may be, a person with syphilis, if advised to do so by his physician, should tell husband or wife the true state of affairs. There is no harder duty, often, and none which, if manfully performed, should inspire more respect. For those who will not follow his advice in this matter the physician cannot assume any responsibility, and is fully justified, and in fact wise, if he decline to undertake the case.

Re-infection.—Since it is a common misconception, it cannot be said too forcibly that no person with syphilis should forget that his having had the disease does not confer any immunity, and that as soon as he is cured he may acquire it again. It is possible, by a single exposure to infection, to undo the

whole effect of what has been done, just after a cure is accomplished. There can be only one safe rule for infected as well as uninfected persons—to keep away from the risk of syphilis.

Quacks and Self-treatment.—Hot Springs.—The temptation to take up quack forms of treatment or to treat himself without the advice of a physician besets the path of the syphilitic throughout the course of the disease; an enormous number of fraudulent enterprises thrive on the credulity of its victims. Most of them are of the patent medicine specific type. Others, however, have a tinge of respectability and are dangerous simply because they are insufficient and not carried out under proper direction. Many popular superstitions as to the value of baths in syphilis and of the usefulness of a short course of rubs with bathing, or a "trip to the springs," are of this kind. Enough has been said in the foregoing chapters to make it plain to any one who is open to conviction that syphilis is no affair for the patient himself to attempt to treat. The best judgment of the most skilled physicians is the least that the victim owes himself in his effort to get well.

Patient and Physician.—For the same reasons every person who has or has had syphilis, cured or not, or has been exposed to it, should make it an absolute rule to inform his physician of the fact. The recognition of many obscure conditions in medicine depends on this knowledge. For a patient to falsify the facts or to ignore or conceal them is simply to work against his own interests and to hinder his physician in his efforts to benefit him.

Chapter XIV

Mental Attitudes in Their Relation to Syphilis

One's way of looking at a thing has an immense influence on what one does about it. Obvious as this principle is in the every-day affairs of life, it becomes still more obvious as one studies a disease and watches the way in which different individuals react to it. The state of mind of a few people infected with a rare condition may not seem a matter of more than passing interest, but in a disease which is a wide-spread and disastrous influence in human life, the sum-total of our states of mind about it determines what we do against it and, to no small degree, what it does to us. Syphilis as a medical problem offers comparatively few difficulties at the present day. What blocks our progress now is largely an affair of mental attitudes, of prejudices, of fears, or shame, of ignorance, stupidity, or indifference. Mental strain, a powerful influence in many diseases, is a factor in syphilis also, and the state of mind of the patient has often almost as much to do with the success of his treatment as has salvarsan or mercury. For that reason it is worth while to devote a chapter to picturing in a general way the mental side of syphilis.

The Public Attitude Toward Syphilis.—First of

all, in order to understand the mental state of the patient, consider once more the attitude of the world at large toward the victim of syphilis. A few who are frankly ignorant of the existence of the disease to start with are unprejudiced when approached in the right way. But ninety-eight persons in a hundred who know that there is such a disease as syphilis are alive to the fact that it is considered a disgrace to have it, and to little else. Such a feeling naturally chokes all but secret discussion of it. Most of us remember the day when newspaper copy containing reference to tuberculosis did not find ready publication. Syphilis is just crossing this same threshold into publicity. It is now possible to get the name of the disease into print outside of medical works and to have it referred to in other ways than as "blood poisoning" in quack advertisements. The mention of it in lectures on sex hygiene is an affair of the last twenty years, and the earlier discussions of the disease on such occasions were only too often vague, prejudiced, and inaccurate. There are many who still believe, as did an old librarian whom I met in my effort to reach an important reference work on syphilis in a great public library. "We used to keep them on the shelves," he said, "until the high school boys began to get interested, and then we thought we would reserve the subject for the profession." Syphilis has been reserved for the profession for five hundred years and the disease has grown fat on it. The lean times will come when a reasonable curiosity about syphilis can be satisfied without either shame or secrecy

by a reasonable presentation of the facts. We need the light on this subject and the light on reserved shelves is notoriously poor. The stigma attaching to syphilis as a disease is one of the most tragic examples of a great wrong done to do a little right. What if there are a few who deserve what they got? We may well ask ourselves how free we are to cast the first stone. And why single out syphilis as the badge of venery? The "itch" is transmitted by sexual relations too. Why not make the itch a sign of shame? The power that has done the damage is not the intrinsic viciousness of syphilis, but the survival of the old idea of sexual taboo, the feeling that sex is a secret, shameful thing, essentially unclean. To this age-old myth some one added the idea of punishment, and brutalized our conception of syphilis for centuries. If there were a semblance of crude, stern justice in accepting syphilis as the divinely established punishment for sexual wrongdoing, protest would lose half its meaning. Not only does syphilis fail to punish justly, but there is also something savage, akin almost to the mental attitude that makes "frightfulness" possible in war, in the belief that it is necessary to make headway against a sexual enemy by torturing, ruining, and dismembering men, women, and children, putting out the eyes of the boy who made a slip through bad companionship and mutilating the girl who loved "not wisely but too well." Only innocence pays the spiritual price of syphilis. The very ones whose punishment it should be are the most indifferent to it, and the least influenced by fear of it in their pur-

suit of sexual gratification. I always recall with a shock the utterance of a university professor in the days when salvarsan was expected to cure syphilis at a single dose. He rated it as a catastrophe that any such drug should have been discovered, because he felt that it would remove a great barrier to promiscuous relations between men and women—the fear of venereal disease. This is the point of view that perpetuates the disease among us. It is this attitude of mind that maintains an atmosphere of disgrace and secrecy and shame about a great problem in public health and muddles our every attempt to solve it. Those who feel syphilis to be an instrument adapted to warfare against sexual mistakes, and are prepared to concede "frightfulness" to be honorable warfare, will, of course, fold their hands and smugly roll their eyes as they repeat the words of the secretary of a London Lock hospital, "I don't believe in making it safe."*

Syphilis as a "Disgrace" and a "Moral Force."—If syphilis really deterred, really acted as an efficient preventive of license, we might have to tolerate this attitude of mind, even though we disagreed with it. I had occasion, during a period of two years, to live in the most intimate association with about 800 people who had syphilis—every kind of person from the top to the bottom of the social scale. It was not a simple matter of ordering pills for them from the pharmacy, or castor oil from the medicine room. I had to sit beside their beds when they heard the truth; I had to see the women crumple up

* Quoted by Flexner in "Prostitution in Europe."

and go limp; I had to tell the blind child's father that he did it, to bolster up the weak girl, to rebuild the wife's broken ideals, to suppress the rowdy and the roysterer, to hear the vows of the boy who was paying for his first mistake, and listen to the stories of the pimp and the seducer. What made syphilis terrible to the many really fine and upright spirits in the mass thus flung together in a common bondage? It was not the fear of paresis, or of any other consequence of the disease. It was the torture of disgrace, unearned shame, burnt into their backs by those who think syphilis a weapon against prostitution and a punishment for sin. It wrecked some of them effectually—left them nothing to live for. It case-hardened others against the world in a way you and I can well pray we may never be case-hardened. It left scars on others, and others laughed it off. Hundreds of sexual offenders passed through my hands, and in the closest study of their points of view I was unable to find that in more than rare cases had the risk of syphilis any real power to control the expression of their desires. Sexual morality is a complex affair, in which the habit of self-control in many other activities of life plays an important part. The man or woman who best deserves to be called clean and honorable and sexually blameless has not become so through a negative morality and an enlightened selfishness. The man who does not have bred into him from childhood the instinct to say the "everlasting no" to his passions will never learn to say it from the fear of syphilis. Sexual self-control is a habit, not a reasoned-out affair, and its

foundation must rest on the rock bottom of character and not in the muck of venereal disease.

The Broader Outlook.—If, then, it avails nothing in the uplifting of our morals to treat syphilis as a disgrace, if the disease is ineffective as a deterrent, and barbarously undiscriminating, inhuman, and unjust as a punishment, let us in all fairness lay aside the attitude of mind which has so hindered and defeated our efforts to deal with it as an arch enemy to human health, happiness, and effectiveness. In the face of all our harsh traditions it takes a good deal of breadth of view to look on the disease impersonally, rather than in the light of one or two contemptible examples of it whom we may happen to know. But, after all, to think in large terms and with a sympathy that can separate the sinner from his sin and the sick man from the folly that got the best of him, is no mean achievement, well worthy of the Samaritan in contrast with the Levite. To the remaking of the traditional attitude of harsh, unkindly judgment upon those unfortunate enough to have a terrible disease, we must look for our soundest hope of progress.

The Mental States of Syphilitics.—The mental outlook of the person with syphilis is in its turn as important a factor in our campaign against the disease as is that of the person without it. In order to give some idea of the ways in which this can influence the situation it may be well to sketch what might be called the four types of mind with which one has to deal—the conscientious, the average, the irresponsible, and the morbid. Under the morbid type are

included those persons who, without having syphilis, are in morbid fear of the disease, or have the fixed belief that they are infected with it, even when they are not.

The Conscientious Type.—Conscientious patients, speaking from the physician's standpoint, are the product of intelligence and character combined. Though distinctly in the minority, and usually met in the better grades of private practice, one is often surprised how many there are, considering the treacherous and deceptive features of the disease, which leave so much excuse for laxity and misunderstanding on the part of the laymen. A conscientious patient is one who is not content with any ideal short of that of radical cure. It takes unselfishness and self-control to go without those things which make the patient in the infectious stage dangerous to others. For a time life seems pretty well stripped of its pleasures for the man who may not smoke, must always think beforehand whether any contact which he makes with persons or things about him may subject others to risk of infection, and perhaps must meet the misunderstanding and condemnation of others whom he has to take into his confidence for the same purpose. An element of moral courage and a keen sense of personal responsibility help to make the ideal patient in this disease. To meet a treatment appointment promptly at the same day and hour week after week, to go through the drudgery of rubbing mercurial ointment, for example, to say nothing of the unpleasantness of the method to a cleanly person, night after night for

weeks, takes unmistakable grit and a well-developed sense of moral obligation. The man who has been cured of syphilis has passed through a discipline which calls for the best in him, and repays him in terms of better manhood as well as better health.

The physician's coöperation in the development of the necessary sense of responsibility and the requisite character basis for a successful treatment is invaluable. To the large majority of the victims of the disease it is a severe shock to find out what ails them. Many of them, without saying much about it, give up all hope for a worth-while life from the moment they learn of their condition. Just as in the old days the belief that consumption was incurable cost nearly as many lives as the disease itself, by leading victims to give up the fight when a little persistence would have won it, so among many who acquire syphilis, especially when it is contracted under distressing circumstances, there is a lowering of the victims' fighting strength, a sapping of their courage which makes them an easy prey to the indifference to cure that is so fatal in this disease. The person with syphilis should have the benefit of all the friendly counsel, reassurance, and moral support that his physician can give, and such time and labor on the latter's part are richly repaid.

The Average State of Mind.—The average mental attitude stops tantalizingly short of the best type of conscientiousness. Average patients are good co-operators in the beginning of a course of treatment or while the symptoms are alarming or obvious, but

their energy leaves them once they are outwardly cured. The average patient only too often overrules his physician's good judgment on trivial grounds, slight inconveniences, and temporary considerations, forgetting that cure is what he needs more than anything else in the world. The deprivations go hard with this type of patients, and it is difficult, almost impossible, to persuade them to stop smoking or to abstain from sexual relations or other contacts that are apt to subject others to risk. Average patients will almost never remain under the care of a physician until cured. A year, or at the most two years, is all that can be expected, and a second or third negative blood test is usually the signal for their disappearance. They are, of course, lost in the great unknown of syphilis, and swell the total of deaths from internal causes of syphilitic origin, such as diseases of the arteries and of the nervous system. A good many have to be treated for relapses, but the amount of infection spread by them, while of course unknown, is probably small considering how many of them there are.

Effect of the High Cost of Treatment.—A factor which is extremely influential in forcing average treatment and ideals on those who, if opportunity were more abundant, would be conscientious about the disease, has already been mentioned as the cost of treatment, which is such that persons with small incomes, who are too proud or sensitive to seek charitable aid, can scarcely be expected to meet. The cost of salvarsan under present conditions is a burden that few can hope to assume to the extent that

modern treatment tends to require, and the slower methods of treatment are more of a tax on the patient's courage and determination, and less effective in preventing the danger of infectiousness, although quite as reliable for cure. There is no more serious problem in the public health movement against syphilis than to get for the average man who can pay a moderate but not a large fee the benefits of expensive and elaborate methods of recognizing and treating a disease such as syphilis. Some practical methods of doing this will be taken up in the next chapter.

The Irresponsible.—The irresponsible attitude of mind about syphilis forms the background of the darkest and most repellent chapter in the story of the disease. Yet we ought to confront it if we wish to master the situation. The irresponsible person has either no regard for, or no conception of, the rights of others where a dangerous contagious disease is concerned, and often little conception of, and less interest in, what is to his own ultimate advantage. Irresponsible syphilitics lack character first and sense next. Many of them, through the gods-defying combination of stupidity and ignorance, cannot be approached through any channel of reason or persuasion. The only argument capable of influencing such minds is compulsion. Others are, of course, mental defectives with criminal and perverted tendencies. Yet it is both amazing and discouraging to find how many irresponsibles there are in the ordinary and even in the better walks of life. To the wilful type of irresponsible person the transmission

of a syphilitic infection is nothing, and cannot weigh a straw against the gratification of his desire or the pursuit of his own interest. The disease cannot teach such people anything, and if it cannot, how can the physician? Such people pursue their personal and sexual pleasure, marry, spread disaster around them, and outlive it all, perhaps brazenly to acknowledge the fact. Others, suave, attractive, agreeable, seductive, often masquerade as respectability, or constitute the perfumed, the romantic, the elegant carriers of disease. The proportion of ignorant to wilful irresponsibility can scarcely be estimated. But there is little choice between the two except on the score of the hopefulness of the latter. As examples of the mixture of types with which a large hospital is constantly dealing, I might offer the following at random, from my own recollections: A milkman came to a clinic one morning with an eruption all over his body and his mouth full of the most dangerously contagious patches. Two of us cornered him and explained to him in full why he should come in if only for twenty-four hours. He promised to be back next morning and disappeared. Another, a butcher in the same condition, put his wife, whom he had already infected, into the hospital, and in spite of every argument by all the members of the staff, went home to attend to his business—the selling of meat over the counter. A lunch-room helper, literally oozing germs, was after several days induced to come up for an examination and promised to begin treatment, whereupon he disappeared. A college student reported with an

early primary sore. "X—— ," I said, "If you will pledge me your honor as a gentleman never to take another chance and not to marry until I say you are cured I will use salvarsan on you, which is just about as scarce as gold now, and give you a chance for abortive cure." He pledged himself, and six months later there was every sign that we were going to secure a perfect result. Suddenly he failed to appear for a treatment appointment, and I never saw him again. But I did see a letter written to him by the clinic which showed that he had come up for the examination with a newly acquired sore while he knew I was away—in all probability a re-infection. He was not even man enough to face me with his broken word. Three or four men with chancres may report in an afternoon and leave, the clinic powerless to detain them or to protect others against the damage they may do. One such, a Greek boy, had exposed four different women to infection before we saw him, and only the most strenuous efforts of the entire staff got him into the hospital, because he had neither money nor sense. Half-witted tramps, gang laborers, and foreigners who cannot understand a word of any other language than Lithuanian or some other of the European dialects for which no interpreter can be secured, pass in a steady stream through the free clinics of large cities. The impossibility of securing even the simplest coöperation from such patients is scarcely realized by any one who is not called upon to deal with them face to face. Even with an interpreter, they display the wilfulness of irresponsibility. One

Italian woman wiped her chancre, which was on her lip, with her fingers at every other shake of the head. She was cooking for two boarders and had two children. She did not like hospitals and was homesick and pettish. Would she go over to the dispensary in the next block and find out how to take care of herself? Not a bit of it. She was going home, and she went. I saw the children later in the children's ward, both infected with syphilis—a poor start in life. Criminal intent in the transmission of syphilis is common enough, and the writer can think offhand of four or five cases in which men or women "got" their estranged partners later in their careers.

The Necessity for Legal Control.—All these repulsive details have a place in driving home a conception of the cost to society of the immoral and irresponsible syphilitic. Syphilis is an infectious disease, dangerous to the individual and to society. If it is rational to quarantine a mouth and throat full of diphtheria germs, it is rational to quarantine a mouth and throat full of syphilitic germs at least until the germs are killed off for the time being. There can be no more excuse for placing society at the mercy of the one than of the other.

The Morbid Attitude of Mind: Syphilophobia.—The morbid attitude of mind, whether in persons who have the disease or in those who fear they may have it, is one of the hardest the physician has to deal with. Any one who knows anything of the disease naturally has a healthy desire to avoid it, and if he is a victim of it, a considerable belief in its seriousness. But certain types of persons, who are

usually predisposed to it by a nervous makeup, or who have a tendency to brood over things, or who perhaps have heard some needlessly dreadful presentation of the facts, become the victims of an actual mental disorder, a temporary unbalancing of their point of view. To the victims of syphilophobia, as this condition is called, syphilis fills the whole horizon. If they have not been too seriously disturbed by the idea, a simple statement of the facts does wonders toward relieving their minds. A few of them cling with the greatest tenacity to the most absurd notions. For those victims of the disease who are the prey of morbid anxiety the assurance that it is one of the most curable of all the serious diseases, and that if they are persistent and determined to get well, they can scarcely help doing so, usually sets their minds at rest. The idea that there is a cloud of disgrace over the whole subject, and the old-fashioned belief that syphilis is incurable and hopeless, inflict needless torture and may do serious damage to the highly organized sensitive spirits which it is to society's best interest to conserve. The overconscientious syphilitic hardly realizes that the real horrors of the disease are usually the rewards of indifference rather than overanxiety. Persons who subject themselves to the ordinary risks of infection which have been described in the preceding chapters do well to be on their guard and to maintain even a somewhat exaggerated caution. Those who do not expose themselves need not look upon the disease with morbid anxiety or alarm. In the relations of life in which syphilis is likely to be a

factor it should, of course, be ferreted out. But there is no occasion for panic. We need a sane consciousness of the disease, a knowledge of its ways and of the means of prevention and cure for the world at large. We do not need hysteria, whether personal or general, and there is nothing in the facts of the situation to warrant the development of such a mental attitude either on the part of the syphilitic or of those by whom he is surrounded. Insofar as morbid fear in otherwise normal persons is the product of ignorance it can be dispelled by convincing them of this fact.

Chapter XV

Moral and Personal Prophylaxis

Prophylaxis, of course, means prevention, and it has been a large part of the purpose of the present study to deal with syphilis from the standpoint of prevention and cure. The material of this chapter is, therefore, only a special aspect of the larger problem.

Repression of Prostitution.—By the moral prophylaxis of syphilis is meant the cultivation of such moral ideals as will contribute to the control of a disease which is so closely associated with sexual irregularities. Since public and secret prostitution serve as the principal agencies for the dissemination of the disease, it follows that anything tending to decrease the amount of disease in prostitutes, on the one hand, or to diminish the amount of promiscuous sexual activity, on the other, will retard the spread of syphilis. Systems based on the first ideas, aiming rather to control the disease in public women by inspection of their health and activities than by suppressing prostitution, have failed because the methods of control ordinarily practised are worthless for the detection of infectiousness. So-called regulation has, therefore, given way very largely in progressive communities to the second ideal of repressing or

abolishing the outward evidences of vice as far as possible. In behalf of sanitary control of prostitution, leaving out of the question its moral aspect, it must be admitted that Neisser, probably the greatest authority on the sexual diseases, believed that, as far as syphilis is concerned, the use of salvarsan as a means of preventing infection from prostitutes has never had a satisfactory trial. In behalf of abolition it would seem that systematic stamping-out of the outward evidences of vice, the making of immorality less attractive and conspicuous, is, in theory at least, a valuable means of diminishing the extent and availability of an important source of infection.

Educational Influences.—To do something positive against an evil is certainly a more promising mode of attack than to use only the negative force of repression of temptation. Education of public opinion offers us just such a positive mode of attack. Men and women and boys and girls should first be taught sexual self-control even before being made aware of the risk they run in throwing aside the conventional moral code. Teach honor first and prudence next. The slogan of education in sexual self-restraint is the easiest to utter and the most difficult to put into practice of all the schemes for the control of sexual diseases. A large part of the difficulty of making education effective arises from one or two situations which are worth thinking over.

Economic Forces Opposing Sexual Self-control.—In the first place, while continence, or abstinence from sexual relations, is a valuable ideal in its place,

it cannot be indefinitely extended with benefit either to the individual or to the race. The instinct to reproduce is as fundamental as the instinct of self-preservation and the desire for food. A social order which disregards it or defies it will meet defeat. To an alarming extent the tendency of the present economic system is to create unsocial impulses by making the normal gratification of sexual instinct in marriage and the assumption of the responsibility of a family more and more difficult. The cost of living is steadily rising without a corresponding certainty on the part of a large proportion of young men that they can meet it for themselves, to say nothing of meeting it for wife and children. The uncertainties of a "job" are often serious enough to discourage the rashest of men from depending on a variable earning power to help him do his share for the advancement of the race. It will be an impossible task to convince even naturally clean-minded, healthy young men and women that they should live a life of hopeless virtue because it is part of the divine order that they should be so held down by hard times and small earnings as to make marrying and having children an unattainable luxury. Continence and clean living as preparations for decent and reasonably early marriage and the raising of a healthy family are the highest of ideals, and ought to be preached from every housetop. Continence as a life-long punishment for the impossible demands of an oppressive social and economic order gets as little attention as it deserves. First, let us make a clean sexual life lead with greater certainty to some of the rewards that make life

worth living and we shall then have a more substantial basis for making continence before marriage other than empty words. If every father, for example, could say to his sons and daughters that if they showed themselves clean men and women he would back them in an early marriage, there would be an appreciable decrease in the amount of young manhood which is now squandered on indecency. If every employer, or the state itself, would give a clean marriage a preferred position in the social and economic scale, and, by helping to meet the cost of it, recognize in a substantial way the value to the race of a family of vigorous children, an important factor in youthful sexual laxity would be robbed of its power. No one will assert that such remedial proposals are of themselves cure-alls for present evils, but they must have at least an emphatic place in the future of moral prophylaxis.

The Teaching of Sexual Self-control.—First, then, make the social order such that sexual self-control yields a reward and not a punishment. Second, teach sexual control itself, since it is one of the fundamental means of attack on the problem of syphilis. How can such control be taught? Information about the physical dangers of illicit sexual indulgence is of course of value, and should be spread broadcast. But taken by itself, the fear of disease, especially if it enters the individual's life after the age when he has already experienced the force of his sexual instincts, is a feeble influence. The person who has nothing but the knowledge that he is taking great risks between him and the gratification of his

sexual desires will take the risks and take them once too often. One cannot begin to teach the boy or girl of high school age that sexual offenses mean physical disaster, and expect to control syphilis. The time to control the future of the sexual diseases is in the toddler at the knee, the child whose daily lesson in self-control will culminate when he says the final "No" to his passions as a man. The child who does not learn to respect his body in the act of brushing his teeth and taking his bath and exercise, and whose thought and speech and temper are unbridled by any self-restraint, will give little heed when told not to abuse his manhood by exposing himself to filth. The prevention of syphilis by sexual self-control goes down to the foundations of character, and has practical value only in those whose self-control is the expression of a lifelong habit of self-discipline bred in the bone from childhood, not merely painted on the surface at puberty. Those who want their sons and daughters never to know by personal experience the meaning of syphilis must first build a foundation in character for them which will make self-control in them instinctive, almost automatic. Knowledge of sexual matters has power only in proportion to the strength of the character that wields it, and on well-rounded character education, rather than mere knowledge of the facts, the soundest results will be based.

The moral prophylaxis of syphilis is then briefly summed up in the repression of as many of the recognized agencies for the spread of the disease as possible; the making of continence a preparation for a normal sex life rather than an end in itself; the

control and remedying of those influences which are making normal marriage harder of attainment; and the development of an instinctive self-control and self-discipline in every field of life from childhood up as the character basis necessary to make knowledge about sexual life and sexual disease effective.

Personal Preventive Methods.—Continence.*—There remains to be considered what is often called the personal prophylaxis of syphilis, meaning thereby the methods by which the individual himself can diminish or escape the risk of infection. The first and most effective method of avoiding syphilis is abstinence from sexual relations and intimacies except in normal marriage with a healthy person. Although it has been alluded to under the moral prophylaxis of syphilis, it deserves to be reëmphasized. No consideration as to the justice or desirability of continence and self-restraint can add anything to the simple fact that it is *the* way to avoid disease, and can be unhesitatingly recommended as the standard for personal prophylaxis. In the experience of physicians it is an axiom that disillusionment sooner or later overtakes those who think they are exempt from this rule. Persons who discard continence in favor of what they believe to be some absolutely safe indulgence are so almost invariably deceived that the exceptions are not worth considering. Although infection with syphilis is no neces-

* The American Social Hygiene Association, 105 W. 40th Street, New York City, can supply pamphlets and lists of authoritative publications bearing on this and related subjects.

sary evidence of unclean living, clean living will always remain the best method of avoiding syphilis.

The Metchnikoff Prophylaxis.—The second method of personal prophylaxis of syphilis was developed as a result of the discovery of Metchnikoff and Roux in 1906, that a specially prepared ointment containing a mercurial salt, if rubbed into the place on which the germs were deposited within a few hours (not exceeding eighteen hours, and the sooner the better) after exposure to the risk of syphilis, would prevent the disease by killing the germs before they could gain a foothold. This method of protection against syphilis has been subjected to rigid tests, with fairly satisfactory results. It has been adopted by the army and navy of practically every country in the world, and, as carried out under the direction of physicians and with military control of the patient, has apparently reduced the amount of syphilitic infection acquired in the armies and navies using it to a remarkable degree. The method, of course, cannot assume to be infallible, but if intelligently applied, it is one of the important weapons for the extinction of syphilis in our hands at the present day. It fails to meet expectations precisely in those circumstances and among those persons in whom intelligent employment of it cannot be expected. This of course covers a considerable number of those who acquire syphilis. What disposal an awakened opinion will make of this knowledge remains to be seen. At the present time it may well be doubted whether the indiscriminate placing of it in the hands of anybody and everybody would not work as much harm as good through ignorant and unintelligent

E. Roux

Élie Metchnikoff
[1845–1916]

(From McIntosh and Fildes, "Syphilis from the Modern Standpoint," New York, Longmans Green & Co., 1911.)

use. This opinion is shared by European as well as American authorities. Administered under the direction of a physician, the Metchnikoff prophylaxis of syphilis would undoubtedly be at its best in the prevention of the disease. For these reasons, as well as to prevent the spread of the knowledge to those who would be damaged by it, those interested are referred to their physicians for a description of the method. Any one having the benefit of it should be able to convince his medical advisor that there is good reason why this kind of professional knowledge should be brought to bear on his case. The ordinary methods of preventing infection by washes and similar applications used by the "knowing ones" are most of them worthless or greatly inferior to the Metchnikoff prophylaxis. They are, moreover, a positive source of danger because of the false sense of security which they create. If every person who has run the risk of contracting syphilis should visit his physician *at once* to receive prophylactic treatment, the effect on syphilis at large would probably be as good as in the army and navy. There would still be opportunity on such occasions to bring moral forces and influence to bear on those who would respond to them. There can be no object in withholding such knowledge from those who are confirmed in their irregular sexual habits. At the same time there could be few better influences thrown across the path of one just starting on a wrong track than that exerted by a physician of skill and character, to whom the individual had appealed to avert the possible disastrous result of an indiscretion.

Chapter XVI

Public Effort Against Syphilis

The World-wide Movement Against Venereal Disease.—This chapter is intended to give some account of the great movements now begun to control syphilis and its fellow-diseases throughout the world. A campaign of publicity was the starting-point of the organized attempt to control tuberculosis, and in the same way a similar campaign has been at the bottom of movements which now, under the pressure of the tremendous necessities of war, are making headway at a pace that generations of talking and thinking in peaceful times could not have brought about. Although this country at the present writing is probably farther in the rear than any other great nation of the world in its efforts to control the venereal diseases as a national problem, it is fortunate in having had the way paved for it by epoch-making movements such as those of the Scandinavian countries, and by the studies of the Sydenham Royal Commission on whose findings the British Government is now undertaking the greatest single movement against syphilis and gonorrhea that has ever been launched. For many years Germany has had a society whose roll includes some of the greatest names in modern science, directing all its energy toward the solution of the problem of sexual

disease, and German sentiment on these matters is developing so fast that it is difficult, even for those in touch with such matters, to keep pace with it. In this country progress has been much slower, hampered by peculiarities of mental outlook and tradition very different from those which have controlled the thought of Europe. The association of syphilis with prostitution has been largely instrumental in putting much valuable statistical and general knowledge of the disease into semi-private reports and sources not available to the large mass of the thinking public. The effect of finding the problem of syphilis invariably bound up with discussions of the social evil has been to perpetuate in popular thought an association which simply blocks the way to any solution of the public health problem. While the control of prostitution will influence syphilis, ignoring syphilis, or treating it as incidental, will never contribute anything to the conquest of either. It is one of the most significant features of the great movements now on foot all over the world that they have finally adopted the direct route, and are attacking syphilis and gonorrhea as diseases and not by way of their association with prostitution.

The agencies in this country which are making notable efforts to push the campaign against syphilis and gonorrhea deserve every possible support from the thinking public. The American Social Hygiene Association is a clearing-house for trustworthy information in regard to the problems of sexual disease, and publishes a quarterly journal.* The National

* Social Hygiene, New York.

Committee for Mental Hygiene and its branch societies are also engaged in spreading knowledge of the relation of syphilis to mental disease and degeneration. State and City Boards of Health are active in their efforts to further the campaign, and notable work is being done by New York City, Buffalo, Cleveland, and Rochester, New York, both on publicity and in the provision of facilities for recognizing and treating the diseases in question. Certain states, such as Ohio, Michigan, and Vermont, have made steps toward an intelligent legislative attack on different aspects of the problem. Influential newspapers and magazines have made the idea of a campaign against these diseases familiar enough to the public, for example, to bring a young girl to me to ask outright without affectation that she be told about syphilis, because she had seen the word in the paper and did not fully understand it. The aggregate of these forces is large, and an awakening is inevitable.

To prepare ourselves for an active and intelligent share in the movement, we should review briefly the essential elements of a public campaign against syphilis as they have been developed by recent investigations and legislative experiments.

Undesirable and Freak Legislation.—Syphilis has had a limited amount of recognition in law, unfortunately not always wise or timely. Freak legislation and half-baked schemes are the familiar preliminaries which precede the grim onset of a real attack supported by public sentiment. Typical examples of such premature legislation may be found in the set-

ting up of the Wassermann test as evidence of fitness for marriage by certain states, and in the efforts of certain official agencies to enforce the reporting of syphilis and gonorrhea by name. Proposals to quarantine and placard all syphilis are in the same category, though seriously entertained by some. The plan to establish by state enactment or municipal appropriation special venereal hospitals falls in the same class, since it is obvious that in the present state of opinion none but down-and-outs would resort to them. The stigma attached to them would effectually make them useless to the very group of worth-while people which it is to the public interest to conserve and reëducate.

Value of Conservative Action.—It cannot be said too often that a reasonable conservatism should temper the ardor of reformers, or more harm than good will be done by the collapse and failure of ill-considered special legislation. Unified action against syphilis and gonorrhea as public health problems is as important as unified action on the problems of railroad control, child labor, or corporate monopoly. For that reason it is a matter of some uncertainty how much can be accomplished by individual states in this country in the way of restrictive legislation, such as that controlling the marriage of infected persons, or punishing persons who fail to carry treatment to the point of cure. Under the direction of a national bureau or department of health administration there is no doubt that the movement against syphilis would advance at a much more rapid pace

than with the sporadic and scattered activities of mixed state and private agencies.

The Essential Features of a Modern Campaign.—The repeated sifting of the facts which has been done in recent years by important investigations, such as that of the Sydenham Commission in Great Britain and the Society for Combatting Sexual Disease in Germany, and the legislative programs already mentioned, have gradually crystallized into fairly definite form, the undoubted essentials of a program for controlling venereal diseases, syphilis among them. These may be summarized as follows:

1. The provision of universally available good treatment, at the expense of the state, if necessary, for the diseases in question.

2. The provision by the state of efficient means of recognizing the diseases at the earliest possible time and with the greatest possible certainty in any given case.

3. The suppression of quack practice, drug-store prescribing, and advertising of cures for these diseases.

4. Moral and educational prophylaxis and the vigorous suppression of prostitution.

In addition to these measures, which are common to all proposals and working systems for the control of sexual disease, certain other recommendations may be classed as debatable, inasmuc[illegible] are still under discussion and have bee[illegible] ed into some and omitted from ot[illegible] l- lows:

1. General instruction in personal prophylaxis for the population at large.

2. Compulsory measures and penalties obliging patients to receive treatment and continue it until cured, regardless of their own desires in the matter.

3. Notification or reporting of cases of sexual disease to the health authorities.

4. Indirect legislation, as it might be called, which aims to detect infected persons before they enter on marriage rather than at the outset of the disease, either by releasing the physician in charge of the case from the bond of professional confidence, or by requiring health certificates before marriage, and which annuls marriages after infection is discovered.

Easily Available Treatment.—It will be noticed that toleration of prostitution with supervision has finally disappeared from the modern program for the control of sexual diseases. The provision for universally available treatment, regardless of the patient's means or circumstances, should be thought of as the one fundamental requirement without which no program has made even a beginning. For over a century Denmark has provided for the free treatment of all patients with venereal disease. The Norwegian law, essentially similar, dates from 1860. Italy a few years ago adopted a similar program, placing squarely upon the state the responsibility of pr for the care of all patients with venereal di land has just adopted a mixed pro- v ll in practice place most of the re- he state and very little on the he expense of treatment is con-

cerned. Germany has compelled her insurance companies to shoulder the burden, and under pressure of war is hastening matters by invoking more and more governmental aid. The recent West Australian Act provides that every medical officer in the pay of the state shall treat venereal disease free of charge. In comparison with the tremendous advances over previous indifference which such programs represent, this country makes a poor showing. Among us, no public agency is formally charged with any duty in the matter of preventing, recognizing, or treating the vast amount of venereal infection that mars our national health. Certain state boards of health are attempting to perform Wassermann tests, and certain municipalities have well-organized laboratories for the detection of syphilis and gonorrhea, but there are few purely public agencies that even pretend to have a specialist in their employ to assist in the recognition of cases and conduct the treatment of patients who cannot afford private care. Hospital and dispensary treatment of venereal diseases is almost entirely in semi-private hands, and a recent investigation of clinics and dispensaries for the treatment of syphilis and gonorrhea in New York city, for example, showed that many of them were so poorly equipped and run at such unreasonable hours that they were frequented only by vagabonds, were of no value in the early recognition of syphilis, could not administer salvarsan under conditions to which a discriminating patient would dare to trust himself, and made no pretense at following their cases beyond the door or

discharging them from medical care as cured. One of the largest cities in this country until a year ago had not even a night clinic to which day workers could come, and is scarcely awake now to the necessity for such a thing.

Dispensary Service.—The provision of adequate treatment and diagnostic facilities, on a par with those which will presently cover Europe, will mean the following things: First of all, dispensaries, and many of them, for the identification of early cases, fully equipped with dark-field microscopes, with record systems, and with the means for following patients from the time they enter until they are cured. This means nurses, it means social service workers, it means doctors with special and not general knowledge of syphilis and gonorrhea. The Brooklyn Hospital Dispensary is an admirable example of what such an institution should be, but it is one where such institutions should be numbered by dozens and by hundreds. Copenhagen, with a population less than that of several cities in this country which have none, has seven municipal clinics whose hours and names are prominently advertised.

Hospitals.—In the second place there must be hospital facilities. They must not be venereal hospitals, but services or parts of general hospitals, so that patients who are received into them will be protected from stigma and comment. Pontopidan, a Danish expert, estimated that for the care of venereal disease one hospital bed to every 2000 of population was insufficient, and yet there are cities

in this country which do not have one bed available for the purpose to 100,000 people. The hospital performs a peculiarly valuable function in the care of syphilis in particular. It provides for temporary quarantine, and for the education of the patient in his responsibility to the community when he is discharged. Three weeks or more under hospital direction is the best possible start for an active syphilis that is to be cured. The privacy of a syphilitic can be protected in a hospital as successfully as in a specialist's office, and the quality of treatment which can be given him is distinctly better than he can obtain while out and around. Hospitals in general have kept their doors closed to syphilis until recently, and it is only under the pressure of a growing understanding of what this means to the public health that they are awakening to their duty.

Cheap Salvarsan.—Before a general campaign for the successful treatment of syphilis can be made a fact, salvarsan must become, as has already been pointed out, a public and not a private asset. It must be available to all who need it at the lowest possible cost*—practically that of manufacture—and must be supplied by the state when necessary. The granting of patent rights which make possible the present exploitation for gain of such vital agents in the protection of the public health is a mistake which we should lose no time in remedying. While salvarsan does not mean the cure of syphilis, it does

* The price of salvarsan before the war was $3.50 per full dose for the drug alone. It can be profitably marketed at less than $1.00 per dose. The patent rights have been temporarily suspended during the war, and their renewal by Congress should not be permitted.

mean a large part of its control as an infectious disease. When it can be given only to the person who can muster from five to twenty-five dollars for each dose which he receives, it is evident that its usefulness is likely to be seriously restricted.

Reduction of the Expense of Efficient Treatment.—Free treatment for those who cannot afford to pay is a necessary part of the successful operation of any scheme for the control of sexual disease. But for those who can and are willing to pay a moderate amount for what they receive, there should be pay clinics which will bridge the gap between the rough and ready quality and the unpleasant associations of a free dispensary, and the expensive luxuries of a specialist's office. This is a field which is almost virgin in this country, and which deserves public support. There is no reason why, for a reasonable fee, the patient with syphilis should not secure all the benefits of hospital care, the personal attention of specially trained men, an intelligent supervision of his case, and the benefit of coöperation between a hospital service in charge of experts and the home doctor who must care for him during a considerable part of the course of his disease. Provision of this sort makes treatment both more attractive and more available to large numbers of people whose pride keeps them away from the public provision for charity cases, and whose limited means leave them at the mercy either of quackery or of well-meaning but entirely inexperienced physicians.

Value of Expert Services.—The factor of expert judgment in the care and recognition of syphilis is

an important one, and a progressive public policy will not neglect to provide for it. The state, municipal or hospital laboratory which professes to do Wassermann tests should not be in charge of some poorly paid amateur or of a technician largely concerned with other matters, or its findings will be worthless. Every clinic and hospital should also attach to its staff an expert consultant on syphilis on whom it can draw for advice in doubtful cases and for the direction of its methods of work. Every city health board which undertakes a serious campaign against syphilis should not be satisfied merely with doing Wassermanns, but should enlist in behalf of the public consultation of the same grade which it expects to employ in the solution of its traction and lighting problems, and in the management of its legal affairs. No one would think nowadays of placing a physician in charge of a great tuberculosis sanitarium whose knowledge of the chest was confined to what he had learned in medical school twenty or more years before—yet in a parallel situation one often finds the subject of syphilis handled with as little attention to the value of expert knowledge. Expert service is expensive, and if the state wishes to command the whole energy of progressive men, it must be prepared to pay reasonably well for what it gets.

Suppression of Quacks and Drug-store Prescribing.—The suppression of quackery is nowhere more urgent than in the control of syphilis. Every important legislative scheme that has come into existence in recent years has recognized this fact. The

devil may well be fought by fire, and reputable agencies should enter the field of publicity with some of the vigor of their disreputable opponents. The brilliant success of this scheme was admirably illustrated by the results of the recent efforts of the Brooklyn Hospital Dispensary, which, by replacing the placards of advertising quacks in public comfort and toilet rooms, and running a health exhibit on Coney Island, attracted to a clinic where modern diagnosis and treatment were to be had an astonishing number of young people who would have fallen victims to quacks. The evil influence of the drug store in perpetuating the hold of syphilis and gonorrhea upon us is just being understood. The patient with a beginning chancre, at the advice of a drug clerk, tries a little calomel powder on the sore, and it either "dries up" and secondary symptoms of syphilis appear in due course, or it gets worse or remains unchanged and the patient finally goes to a doctor or a dispensary to find that his meddling has lost him the golden opportunity of aborting the disease. If secondaries appear, a bottle or two of XYZ Specific, again at the suggestion of the all-knowing drug clerk, containing a little mercury and potassium iodid, disposes of a mild eruption, and a year or so later a marriage with subsequent mucous recurrences and the infection of the wife signalizes the triumph of ignorance and public shortsightedness. The health commissioner of one of the largest and most progressive cities in this country stated before a recent meeting of the American Public Health Association that he had sent a special investigator

to twelve representative drug stores in his city, and that simply on describing some symptoms, without even the ceremony of an examination, he had received from ten of them something to use on a sore or to take for gonorrhea. It is only justice to say that occasionally one finds drug stores which will refer a patient to a doctor or a dispensary. Drastic legislation to suppress this sort of malpractice is part of the program of Great Britain, Germany, and West Australia, and we in this country cannot too quickly follow in their steps.

Publicity Campaign.—The educational campaign against sexual disease has already been discussed in theory. In close relation to it is the question of the use of publicity methods for legitimate ends, mentioned above. It has had a number of interesting applications in practice. The West Australian law has taken the stand of prohibiting all advertising, replacing the method of attracting the patient into coming for treatment of his own free will by the method of making treatment compulsory under heavy penalty. In this country, where compulsory legislation will be slow of adoption, publicity methods will have a certain vogue and a proper place. It has been of great service in the campaign against tuberculosis and in the movements for "Better Babies" and the like. It should never be forgotten that it is a two-edged weapon, however, and that where a stigma exists, as in the case of sexual disease, too much advertising of the place of treatment as distinguished from the need for it will drive away the very people whose sensitiveness or need for secrecy

must be considered. On the other hand, the publication of material relating to sexual diseases in the public press has not yet reached the height of its possibilities, and should be pushed.

Utilization of Personal Prophylaxis.—Passing now to the debatable elements in a public campaign, opinion about the value of personal prophylaxis (Metchnikoff) against syphilis shows interesting variations in different countries at the present time. English-speaking countries hesitate over this. On the other hand, eminent German authorities, such as Neisser and Blaschko, urged it at the outset of the present war, and their views have apparently overcome a vigorous opposition. As a result, the knowledge of methods of preventing venereal infection are being spread broadcast over Germany in the hope of diminishing the inevitable risk that will arise with the disbanding of armies after peace is concluded, no matter how stringent the precautions taken to insure the health of soldiers before their return to civil life. The results of this experiment will be watched with the most intense interest by all those familiar with the situation, and the results will be of value as a guide for our own policy when we have had time to develop one. It is interesting that the most radical departure in the way of legislative provision for sexual disease, that of West Australia, takes up the patient at the point where his infection begins and promptly places him under penalty in the hands of a physician, but assumes no responsibility for other than indirect prevention. The most radical of all present-day legal measures against the disease

has therefore not yet reached the radicalism of compulsory prophylaxis as it exists in armies, or even the radicalism of compulsory vaccination for smallpox.

Reporting of Syphilis to Health Officers.—The question of reporting syphilis to health officers as a contagious disease is a good one to raise in a meeting when a stormy session is desired. Upon this question wide differences of opinion exist all over the world. The right of a sick person to privacy, always deserving of consideration, becomes acute when it touches not only his physical but his social, economic, and moral welfare. It becomes a matter of importance to the state also when the prospect that his secret will not be kept leads him to conceal his disease and to avoid good public aid in favor of bad private care. It is a question whether the amount gained by collecting a few statistics as to the actual presence of the disease will be offset by the harm done in driving to cover persons who will not be reported. Modified forms of reporting sexual diseases, without name or address, for example, can be employed without betraying a patient's identity, thus doing away with some of the objections, and they have been in force in such cities as New York for some time. Vermont has recently adopted a compulsory reporting system, with the almost ludicrous result that by the figures her population shows 0.5 per cent syphilis, when the truth probably stands nearer 10 per cent. Much of the difficulty with reporting systems goes back to the lack of an educated public or professional sentiment behind them. For this reason they may be fairly placed in the category

of premature legislative experiments, and should be postponed until a more favorable time. That this view has the sanction of students of such problems is borne out by the recent comment of Hugh Cabot on this issue, and by the decision of the British Royal Commission which, after careful deliberation, decided not to recommend to the Government at the present time any form of reporting for sexual disease. The West Australian law recognizes the wisdom of providing the patient having sexual disease with every safeguard for his secret provided he conforms to the requirement of the law in the continuance of his treatment. German sentiment is strongly against reporting, and no provision is made for it in the civil population. On the other hand, the very complete programs of the Scandinavian countries provide for reporting cases without names. It is, therefore, apparent, in view of this conflict of opinion, that we can afford to watch the experience of our neighbors a little longer before committing ourselves to the risk of arousing antagonism over a detail whose importance in the scheme of attack on syphilis is at best secondary to the fundamental principles of efficient treatment and diagnosis. There is no apparent reason why we should not be satisfied, for the present, at least, with drawing to our aid everything which can give us the confidence and the willing coöperation of those we want to reach. Physicians who work with large numbers of these patients realize that privacy is one of the details which has an attraction that cannot be ignored.

Compulsory Treatment.—Compulsory provisions

in the law form the third debatable feature of a modern program against syphilis. The Scandinavian countries have adopted it, and in them a patient who does not take treatment can be made to do so. If he is in a contagious condition, he can be committed to a hospital for treatment. If he infects another, knowing himself to have a venereal disease, he is subject, not to fine, but to a long term of imprisonment. The West Australian law is even more efficient than the Scandinavian in the vigor with which it supplies teeth for the bite. The penalties for violations of its provisions are so heavy as to most effectually discourage would-be irresponsibles. At the other end of the scale we find Great Britain relying thus far solely upon the provision of adequate treatment, and trusting to the enlightenment of patients and the education of public sentiment to induce them to continue treatment until cured. Italy has, in the same way, left the matter to the judgment of the patient. The Medical Association of Munich, Germany, in a recent study has subscribed to compulsory treatment along the same lines as the West Australia act, although thus far enforcement has been confined to military districts. The program for disbanding of the German army after the war, however, includes, under Blaschko's proposals, compulsion and surveillance carried to the finest details. A conservative summary of the situation seems to justify the belief that measures of compulsion will ultimately form an essential part of a fully developed legal code for the control of syphilis. The reasons for this belief have

been extensively reviewed in the discussion of the nature of the disease itself (pages 104–105). On the whole, however, the method of Great Britain in looking first to the provision for adequate diagnosis and treatment, and then to the question as to who will not avail himself of it, is a logical mode of attacking the question, and as it develops public sentiment in its favor, will also pave the way for a sentiment which will stand back of compulsion if need be, and save it from being a dead letter.

Backwardness of the United States in the Movement.—It will be apparent, from the foregoing review of the world movement against syphilis, and the essentials of a public policy toward the disease, that the majority of our efforts in this direction have been decidedly indirect. We have no national program of which we as a people are conscious. It is all we can do to arouse a sentiment to the effect that something ought to be done. In these critical times we must mobilize for action in this direction with as much speed at least as we show in developing an army and navy, slow though we are in that. To limit our efforts to the passing of freak state legislation regulating the price of a Wassermann to determine the fitness of a person for marriage, when both Wassermann test itself, and Wassermann test as evidence of fitness for marriage, are likely, under the conditions, to be absolutely worthless, is to play penny eugenics. The move to take the gag from the mouth of the physician when an irresponsible with a venereal disease aims to spread his infection by marriage is at least intelligent, preventive, even

if indirect, legislation, because it acts before and not after the event. Although at the present time we cannot boast a single example of a complete program of direct legislation, the example of Michigan, which is providing free hospital treatment for adults and children with syphilis, should be watched as the first radical step in the right direction. If war and our mobilization for defense leave us with every hospital and dispensary and public health resource and all the expert judgment we have available within our borders enlisted finally in a great campaign against gonorrhea and syphilis, it will have accomplished a miracle, though it will have done no more than war has done for Europe. If it leaves us even with our more progressive states committed to an expanding program of universal efficient and accessible diagnosis and treatment, it will have conferred a blessing.

Relation of War to the Spread of Venereal Disease.—The frequent reference to the relation of war to the problems of sexual disease seems to justify a concluding paragraph on this aspect of the matter. Much of the impetus which has carried European nations so far along the road toward an organized attack on syphilis and gonorrhea, as has been said, is undoubtedly due to the realization that war in the past has been the ally of these diseases, and that a campaign against them is as essential to national self-defense as the organization of a vast army. Conflicting reports are coming from various sources as to the prevalence of syphilis and gonorrhea among European troops, although hopeful indications seem to be that troops in the field may have even a lower

rate of disability than in peace times (British figures). The most serious risks are encountered in troops withdrawn from the front or sent home on leave, often demoralized by the strain of the trenches. The steady rise in the amount of syphilis in a civil population during war is evidenced, for example, by the figures of Gaucher's clinic in Paris, in which, just before the war, 10 per cent of patients were syphilitic; after the first sixteen months of the war 16.6 per cent were syphilitic, and in the last eight months, up to December, 1916, 25 per cent had the disease. There can be no doubt that a campaign of publicity can do much to control the wholesale spread of infection under war conditions, and we should bend our efforts to it, and to the more substantial work of providing for treatment and the prevention of infectiousness, with as much energy as we devote to the other tasks which preparedness has forced upon us. The rigorous provisions proposed for continental armies should be carefully studied, and in no cases in which either syphilis or gonorrhea is active should leave or discharge be granted until the infectious period is over. Compelling infected men to remain in the army under military discipline until cured might have a deterrent effect upon promiscuous exposure. In addition we should create as rapidly as possible a mechanism for keeping inactive cases under surveillance after discharge until there can no longer be the slightest doubt as to their fitness to reënter civil life. Observers of European conditions in the population at large are emphatic in saying that home conditions must have as much attention as the army, and that

suppression of open prostitution, a watchful eye on the conditions under which women are employed or left unemployed, and the control of contributory factors, such as the liquor traffic, must be rigorously carried out. Nation-wide prohibition will do much to control venereal disease.* It is interesting and significant that little reliance is being placed on the obsolete idea that prostitution can be made a legitimate and safe part of army life solely by personal prophylactic methods, or by any system of inspection of the women concerned. It is a hopeful sign that this conception is at last meeting with the discredit which has long been due it.

The question has occurred to those interested in compulsory military service as a measure of national defense as to whether the mobilization of troops for training will favor the spread of sexual disease. Unfortunately, there are no satisfactory figures for the civil population showing how many persons per thousand per year acquire syphilis or gonorrhea, to be compared with the known figures for the onset of such infections in the army. Arguing from general considerations, however, there seems to be no reason to suppose that the army will show a higher proportion of infections than civilians. In fact, there is every ground for believing that the percentage will be lower, since the army is protected by a fairly efficient and enforceable system of prophylaxis which is taught to the men, and they live, moreover,

* Through the effect on prostitution. A well-known and very intelligent prostitute, with whom this question was recently discussed, rated the liquor traffic first among the influences tending to promote prostitution.

under a general medical discipline which reduces the risk of infection from other than genital sources to the lowest possible terms. In opposition to the conception that the sexual ideals of the army are low, it may be urged that they are no lower than those of corresponding grades in civil life, and that hard work and rigid discipline have a much better effect in stiffening moral backbone than the laxities of present-day social life. In the last analysis, the making of the moral tone of the army is in our own hands, and by putting into it good blood and high ideals, we can do as much to raise from it a clean manhood as by submitting that same manhood to the temptations and inducements to sexual laxity that it meets on every street corner.

This chapter closes the discussion of syphilis as a problem for the every-day man and woman. It represents essentially the cross-section of a moving stream. Today's truth may be tomorrow's error in any field of human activity, and medicine is no exception to this law of change. It is impossible to speak gospel about many things connected with syphilis, or to offer more than current opinion, based on the keenest investigation of the facts which modern methods make possible. None the less, the great landmarks in our progress stand out with fair prospect of permanent place. The germ, the recognition of the disease by blood test and dark field microscope, the treatment and prevention seem built on a firm foundation. As they stand, without regard to further advances, they offer a brilliant future to a campaign for control. To that campaign, each

and every one of us can address himself with the prospect of adding his mite of energy to a tremendous movement for human betterment. For every man or woman to whom the word syphilis can be made to mean, not a secret, private, shameful disease, but a great open problem in public health, a recruit has been called to the colors. There are no signs more hopeful of the highest destiny for humanity than those of today which mark the transition of disease from a personal to a social problem. Such a transition foreshadows the passing of syphilis. In that transition, each one of us has his part. Toward that consummation, a goal only to be won by united and stubborn assault, each one of us can contribute the comprehension, the sympathetic support, the indomitable determination, which make victory.

INDEX

Abortion, syphilis as cause of, 95
Abortive cure and marriage, 127
of syphilis, 27, 86
salvarsan in, 73, 79, 89
time required for, 87
Accidents, late, 45. *See also late syphilis*
Advertising in regard to treatment for syphilis, 175, 176
Alcohol, effects of, in syphilis, 137
America, backwardness of, in movement against venereal diseases, 181
state control of venereal diseases in, 170
American Social Hygiene Association, 165
pamphlets, 161
Antibodies in disease, 54
Antiseptics, effect of, on germ of syphilis, 27
Appearance of chancre, time elapsing before, 29
Armpits, contagious patches in, 38
Army and navy, Metchnikoff prophylaxis in, 162
probable outlook for venereal diseases in, 184
proposed measures relative to venereal disease in, 183
syphilis in, 25
Arsenic in salvarsan, 71
Arteries, effect of syphilis on, 47
Australia. *See West Australia*
Babies, hereditary syphilis in, 99
Baltimore Vice Commission, report of, 134
Baths in treatment of syphilis, 140
Bath-tubs not means of transmitting syphilis, 114
Berlin, syphilis in clerks and merchants of, 25
Birth, premature, 95
Blaschko and German sexual disease program, 177, 180
estimate of syphilis in Berlin, 25
Blindness in hereditary syphilis, 104
Blood, Spirochæta pallida in, during secondary stage of syphilis, 35
test for syphilis, 54. *See also Wassermann test*
vessels, late syphilis in, 46
Board of Health, activities of, against syphilis, 165
national, need for, 167
Body, invasion of, by germs in secondary stage of syphilis, 35
Bones in hereditary syphilis, 102
late syphilis (gumma) in, 46
Spirochæta pallida in, 39
supposed effect of mercury on, 63
Bordet and Wassermann, blood test for syphilis, 14
Brain, late syphilis of, 48
softening of, 48

Brawl chancre, 116
Breasts, contagious patches on, 38
Brooklyn Hospital Dispensary, 171
  health exhibit by, 175

Cabot, Hugh, comment on reporting syphilis, 179
Cancer following smoker's patch, 138
Chafe, chancre resembling, 30
  relation of, to infection with syphilis, 28
Chancre, 29
  and cold sores, 30
  appearance of, 30
  brawl, 116
  combined with chancroid, 30
  concealment of, by gonorrhea, 30
  contagiousness of, 109
  contracted during engagement, 117
  cure of syphilis in stage of, 85
  developed from kissing game, 117
  diagnosis of, prevented by improper treatment, 32
  ease with which overlooked, 30
  enlargement of glands near, 33
  extra-genital, from lax relations, 134
  importance of early recognition of, 31, 34
  in women, 30
  location of, 28
  of the lip, 117, 119
  on knuckle (brawl chancre), 116
  painlessness of, 30
  soft, 30. *See also chancroid*
  tertiary symptoms following, 45
  urethral, in men, 30
  variations in, 30
Chancroid, 16
  and syphilitic infection, 30
  confusion of, with syphilitic chancre, 31
Child, death of, in syphilitic miscarriages or abortion, 95
  early signs of hereditary syphilis in, 99
  effect of syphilitic eye trouble on development of, 103
  healthy, born of syphilitic mother, 94
  infection of wet nurse by syphilitic, 100
  necessity of teaching sexual self-control to, 160
  older, effect of hereditary syphilis on, 102
  transmission of syphilis from mother to, 92
  treatment of syphilis in, before birth, 97
  unborn, effect of syphilis on, 98
Child-bearing, effect of syphilis on, 95
Children, adopted, syphilis in, 106
  syphilitic, mental condition of, 101
Clap, 16. *See also gonorrhea*
Clinics for pay patients to secure better treatment, 173
  inadequate, for venereal disease, 170
  night, necessity for, 171
Cold sores and chancres, 30
College students, syphilis in, 25
Commission, Baltimore Vice, 134
  Sydenham Royal, 164
Complications, serious, of syphilis, 45

Compulsory treatment, state provision for, 169
Conception, influence of syphilis on, 95
treatment of syphilis occurring in mother after, 97
Coney Island Health Exhibit, 175
Contagiousness of moist sores in syphilis, 27, 38, 110
of secondary relapses in syphilis, 42
syphilitic sores, 38
of syphilis, 109. *See also infectiousness, infection, and transmission*
and medical examination of prostitutes, 135
control of, by salvarsan, 73, 74, 122
detection of, by examination of patient, 123
disappearance of, in late syphilis, 110
duration of, in late syphilis, 112
under treatment, 123
effect of incomplete cure on, 83
of local irritation on, 43
of mercury on, 64
of moisture on, 27, 38, 110
of time on, 111
of tobacco on, 138
estimate of risk for wife, 125
factors tending to increase, 112
five-year rule in relation to, 124
hereditary, 100, 105
ignorance of, in women, 135
impracticability of quarantine in control of, 121
Contagiousness of syphilis in wet nurses, 101
inability of mercury to control, 123
obstacles to control by treatment, 123
Continence as personal prophylaxis, 161
economic forces opposing, 157
Copenhagen, dispensaries for treatment in, 171
Cost, economic, of mental disease due to syphilis, 51
of living, effect of, on marriage and sexual life, 158
of treatment, effect of, 84, 149
Cups, drinking, transmission of syphilis by, 113
Curability of syphilis, critical estimate of, 90
Cure, importance of, for the wife, 128
incomplete or symptomatic, danger of, 82
of early syphilis, abortive, 27, 34, 86, 127
of hereditary syphilis, 107
of syphilis, 124, 126, 129. *See also five-year rule*
abortive, salvarsan in, 73, 79, 89
complete, responsibility of the physician in regard to, 84
effect of cost on, 84, 149
stage of disease on, 85
importance of, 90
in early stage, 27, 86
in primary stage, 85. *See also cure of syphilis, abortive*
in secondary stage, 86, 88
methods of determining, 90

Cure of syphilis, obstacles to, 80
radical or complete, 80
Wassermann test in, 58
symptomatic, in late syphilis, 87
time required for, 87

Dark-field examination, use of, in recognising contagious recurrences, 111
germ of syphilis in, 22
importance of using, 22
use of, in recognising early syphilis, 33
Deafness and loss of speech due to hereditary syphilis, 104
Deaths due to hereditary syphilis, 98, 99
due to late syphilis, 48
Denmark, free treatment of syphilis in, 169
Disgrace, syphilis and, 142, 144
Disinfection of hands, dishes, etc., by washing and disinfectants, 114
Dispensaries for syphilis in large cities, 170
Drinking of alcoholic liquors, effect of, in syphilis, 137
"Drops," 69
Drug stores and drug clerks, evil influence of, 175
prescribing, suppression of, 168, 174
Drying, effect on germ of syphilis, 27
Dumbness (loss of speech) in hereditary syphilis, 104
Dyes, relation of, to salvarsan, 70

Ears, secondary recurrences affecting, 43
Ears, trouble in, in hereditary syphilis, 104
Eating utensils, transmission of syphilis by, 113, 115
Education and character in the control of syphilis, 160
as means of controlling contagiousness of syphilis, 122
Ehrlich, Paul, 70
Engagements, syphilis contracted during, 117
to marry in syphilitics, precautions in connection with, 129
England, action of, against drug stores prescribing for syphilis, 176
provision for treatment of venereal disease in, 169
treatment not compulsory in, 180
English-speaking countries, attitude on Metchnikoff prophylaxis in, 177
Eruptions, absence of, in serious syphilis, 46
effect of mercury on syphilitic, 64
in hereditary syphilis, 100
non-syphilitic, 37
recurrent, 42, 43
secondary syphilitic, 36
syphilitic, effect of salvarsan on, 74
Estimate of damage caused by syphilitic eye trouble, 103
of frequency of relapse and recurrence in secondary syphilis, 125
of increase of syphilis during war, in Paris, 183
of percentage of marital syphilis, 119

Estimate of percentage of non-genital syphilis, 119
of prevalence of gonorrhea, 26
of syphilis, 24, 25
of risk of infecting wife, 125
of syphilis in prostitutes, 134
Examination, medical, before marriage, 130
limitations of, in detecting contagiousness, 123
Excesses, effect of, on the syphilitic, 137
Expense of treatment, effect of, 77, 84, 149
Expert advice, importance of, 32
in secondary stage of syphilis, 86
in pay patient clinics, 174
services, value of, in control and treatment of syphilis, 173
Eye trouble in hereditary syphilis, 103
in later life, 105
in secondary syphilis, 36
Eyes, secondary syphilitic recurrences affecting, 43

Family, economic forces working against, 158
transmission of syphilis in, 116
Fathers of families, encouragement of early marriages by, 159
syphilis in, 93, 126
Fiancée, non-genital chancre in, 129
First sore, 29. *See also chancre*
Fist chancre, 116
Five-year rule, 124, 126, 129
in relation to marriage, 126
Fournier's estimate of prevalence of syphilis, 24
France, increase of syphilis in, during war, 183

Gaucher's estimates of increase in syphilis during war in France, 183
Genital syphilis in lax individuals, 133
Genitals, contagious sores on, 38, 112
fitness of, for harboring germs of syphilis, 118
Germ of syphilis, 40. *See also Spirochæta pallida*
Germany, action of, against drug store prescribing for syphilis, 176
attitude on Metchnikoff prophylaxis in, 177
compulsory treatment of venereal disease in, 180
sentiment against reporting of venereal disease in, 179
society for preventing sexual disease in, 164
syphilis in, 25
Germs, behavior of, in various diseases, 40
Glands, enlargement of, in neighborhood of chancre, 33
in chancre of the lip, 33
Gonorrhea and syphilis, measures to prevent spread from army to general population, 183
concealment of chancre by, 31
confusion of, with syphilis, 13, 16, 31
drug store treatment of, 175
estimated prevalence of, 26
in prostitutes in Baltimore, 134

Gonorrhea, transmission of, by toilet seats, 114
Great Britain. *See England*
Gumma, 46. *See also syphilis, late*
effect of treatment on, 47
nature of, 46
Gummatous infiltration in hereditary syphilis, 102
in late syphilis, 46

Haiti, origin of syphilis in, 11
Hata, 70
Headaches in syphilis, 36
Health, effect of secondary syphilis on, 36
Exhibit, Brooklyn Hospital Dispensary, 175
Hearing, disturbances of, in hereditary syphilis, 104
in secondary syphilis, 36
Heart in hereditary syphilis, 102
Hereditary syphilis, apparently healthy children with, 101
as cause of abortions and miscarriages, 95
of death, 98
blindness in, 104
bones and teeth in, 102
contagiousness of, 100, 105
deafness in, 104
early signs of, 99, 100
effect of accident and injury in, 105
eye trouble in, 103
heart, blood-vessels and nervous system in, 102
Hutchinson's teeth in, 102
immunity in, 106
in adopted children, state provision for care of, 106
in infant, 99
Hereditary syphilis in unborn child, 98
late, in older children and adults, 101
moral costs of, 99
non-transmission of, by marriage, 105
treatment of, 107
in school hospitals, 108
Hoffmann's rule for marriage of syphilitics, 124
Hospital beds, number of, needed for venereal disease, 171
treatment for hereditary syphilis, 108
Hospitals in treating venereal disease, 171
special venereal, 167, 171
Hot Springs in treatment of syphilis, 140
Hunter, John, 13
Husband, probability of infection of wife by, 125
Hutchinson's teeth in hereditary syphilitics, 102
Hygiene, personal, of the syphilitic, 136

Idiocy in hereditary syphilis, 101
Immunity in syphilis, absence of, 139
hereditary, 106
Incubation period of syphilis, 28, 29
Infection, break in skin necessary to, 28
double, with gonorrhea and syphilis, 30
with syphilis and chancroid, 30
point of entry of, site of chancre, 29
risks of, 32

Infection, time elapsing after, before chancre appears, 29
unsuspected risk of, 161
with syphilis favored by moisture, 27
Infectiousness of syphilis. *See contagiousness*
of syphilitic discharges, 28
Infiltration, gummatous, in late syphilis, 46
in hereditary syphilis, 102
Injections, mercurial, 66
Innocence, question of, in transmission of syphilis, 118
Inoculation, favorable ground for, 114
Insane asylums, amount of syphilitic mental disease in, 50
Inunctions, advantages of, 66
disadvantages of, 65
mercurial, 65
number required for cure, 66
Iodid of potash, 69
Irresponsible mental attitude in syphilis, 150, 151
Irritation, effect of, on contagious recurrences, 43
Italy, non-compulsory treatment in, 180
provision for treatment of venereal disease in, 169

Keratitis, interstitial, in hereditary syphilis, 103
Kernels. *See glands*
Keyes' estimate of risk of infection of wife by husband, 125
Kissing, rules governing, in syphilitics, 138
transmission of syphilis by, 116
Knuckle chancre, 116

Late syphilis, non-contagious character of, 110
premature development of, 45
prospects for cure in, 86
Latent or concealed syphilis, 22
Law, Ohio, relative to physicians and marriage of syphilitics, 131
controlling professional confidence, 131
crippling physician in relation to marriage of syphilitics, 131
providing for compulsory treatment in various countries, 180
Legal control, necessity for, in irresponsible syphilitics, 153
Legislation, conservative, 167
indirect, against venereal disease, 169
undesirable and freak, 166
Legs in locomotor ataxia, 49
Lemberg, study of prostitutes in city of, 134
Lesion, primary. *See chancre; also sore*
Life, well-balanced, for syphilitic, 137
Lip, chancre of, glands in, 33
Liquid medicine, giving of mercury in form of, 65
Liquor, alcoholic, effect of, in syphilis, 137
traffic, importance of abolition of, in prevention of venereal disease, 184
Liver, Spirochæta pallida in, 39
Locomotor ataxia, 48
frequency of, 51
stomach symptoms in (gastric crises), 49

Locomotor ataxia, symptoms in legs, bladder and rectum, 49
syphilitic germs in spinal cord in, 49
treatment and prevention of, 52
London, syphilis in, 24
Luetin test, Noguchi, 79

Malaria, comparison of, with syphilis, 62
Marriage and abortive cure of syphilis, 127
and five-year rule, 126
and syphilis, 125
and Wassermann test, 130
annulment of, for concealment of syphilitic infection, 132
early encouragement of, by state, parents, employers, 159
effect of economic forces on, 158
medical examination for syphilis before, 130
of hereditary syphilitics, 105
of persons with syphilis, inability of physician to prevent, 131
of syphilitics, Hoffmann's rule for, 124
syphilis acquired in, 120
Massachusetts, syphilitic mental disease in, 51
Medical examination before marriage, 130
in relation to syphilis, 130
of prostitutes, 135, 136
Mental attitude in relation to syphilis, 141
morbid, in syphilis, 153
disease and hereditary syphilis, 101
Mental disease and syphilis, 50
Hygiene, National Committee for, 166
Mercury, 62
and salvarsan, combination of, in controlling contagiousness, 124
comparative value of, 63
deceptive value of, 64
effect of, on syphilis, 63
inability of, to control contagiousness, 123
ineffectiveness of, by mouth, 65
injections of, 66
injurious effects of, 67
inunctions (rubs), 65
methods of administering, 64
of using in treatment, 62
misconception in regard to, 63
Metchnikoff and Roux, 14
prophylaxis in syphilis, 162
Michigan, legislative measures against syphilis in, 182
Military service, universal, and spread of venereal disease, 184
Miscarriage and abortion, syphilis as cause of, 95
repeated, 95
Misconceptions regarding cure of syphilis with salvarsan, 72
syphilis in children, 100
Moisture, effect of, on contagiousness of syphilis, 27, 38, 110
relation of, to infection with syphilis, 27, 38, 110
Moore, Noguchi and, 48
Moral problems in relation to syphilis, 18
Morality, sexual, in relation to syphilis, 18
Morals, syphilis and, 144

Morbidness in syphilitics, 153
Mother, knowledge of, in adopting a child, 106
syphilitic, apparent good health of, 93
period of greatest danger to child, 94
treatment of syphilis in, 97
Mouth, administration of mercury by, 64
contagious sores in, 38, 42. *See also mucous patches*
effect of mercury on, 67
late syphilis in, 47
Mucous patches, 38, 42
cancer following, 138
effect of salvarsan on, 74
of tobacco in predisposing to, 43, 112
susceptibility of prostitutes to, 136

National Board of Health, need for, 167
Neck, enlargement of glands in, 33, 34
Neosalvarsan, 75
Nervous strain, effect of, on syphilis, 137
system, complications, relation of, to mild secondary syphilis, 45, 46
examination of, in determining cure of syphilis, 90
relapses, 43
Spirochæta pallida in, 39
New York City, clinics and dispensaries in, 170
reporting of syphilis in, 178
Noguchi, 48
test, luetin, 79
Non-genital syphilis, estimate of percentage of, 119
in lax individuals, 133, 134
Notification of venereal disease. *See reporting*
Nurse, accidental infection of, with syphilis, 116
wet, syphilis in, 100
Nursing mothers, syphilitic germs in milk of, 39
of syphilitic child by mother, 101

Ohio, law permitting physician to prevent marriage of contagious syphilitic person, 131
Overwork, effect of, on syphilitics, 137

Papee's study of prostitution in Lemberg, 134
Paralysis, general, danger to others in, 49, 50
estimated frequency of, 51
mental symptoms in, 49
of insane, 48
syphilitic germs in brain in, 49
treatment and prevention of, 52
Paresis, 48. *See also paralysis, general*
Paris, increase of syphilis in, during war, 183
Physician, accidental infection of, with syphilis, 116
coöperation of, in educating syphilitic, 148
importance of informing, in regard to syphilis, 105, 140
inability of, to prevent marriage of persons with syphilis, 131

Physician proper person to administer Metchnikoff prophylaxis, 163
Piles, contagious sores mistaken for, 43
Pills, ineffectiveness of, in treating syphilis, 65
mercury, 65
Pinkus' estimate of syphilis in Germany, 25
Pontopidan's estimate of number of hospitals needed for venereal diseases, 171
Population, civil, syphilis in, 183
general, prevention of venereal disease in, during war time, 184
Potash, iodid of, 69
Pregnancy, syphilis acquired during, 94
treatment of mother during, 97
Prevalence of gonorrhea, estimates of, 26
of syphilis, estimates of, 24, 25
Prevention of locomotor ataxia and general paralysis, 52
of syphilis. *See prophylaxis*
Primary lesion. *See chancre*
stage. *See also chancre*
contagiousness of syphilis in, 109
cure of syphilis in, 85
Prohibition, national, importance of, in controlling venereal disease, 184
Prophylaxis, educational, 157
state provision for, 168
Metchnikoff, 162
utilization of, in public campaign, 177
moral, of syphilis, 156
Prophylaxis, personal, of syphilis, continence in, 161
general instruction in, 169
in army and navy, 162
physician proper person to administer, 163
unsatisfactory features of, 162
Prostitutes in Baltimore, gonorrhea in, 134
medical examination of, 135
syphilis in, 134
Prostitution, abolition or repression of, 156, 157
and syphilis, 18, 133
clandestine, risks of, 136
effects of liquor traffic on, 184
regulation of, 156
Psoriasis, confusion of, with syphilitic eruptions, 37
Public Health, syphilis as problem of, 18
Service, United States, estimates of prevalence of syphilis, 24
opinion about syphilis, 141
sentiment and reporting of syphilis to health officers, 178
Publicity, campaign for, 176

Quacks, suppression of, 168, 174
treatment of syphilitics by, 140
Quarantine and freak legislation, 167
compulsory, for irresponsible syphilitics, 153
limitations of, in controlling spread of syphilis, 121
temporary, for syphilis, in hospitals, 172
Quiescent period following entry of germ, 28

Railroad men, locomotor ataxia and general paralysis in, 50
Rash. *See eruption*
Recurrences, contagiousness of, 111
  estimated frequency of, in secondary syphilis, 125
  in secondary stage, 42, 43
Re-infection with syphilis, 139
Relapses, contagious, in syphilis, 42
  frequency of, in secondary stage, 125
  in nervous system, 43
Reporting of syphilis, attitude of various countries on, 179
  to health officers, 178
Resistance of body to syphilis, 29, 107, 112
Rest, need of, in syphilis, 137
Restaurants, risk of transmitting syphilis under conditions found in, 115
Rheumatism, symptoms resembling, in secondary syphilis, 36
Ricord, founder of modern syphilology, 13
Rub, mercurial. *See inunction*
Rule, five-year, 124, 126, 129
  for marriage of syphilitics. *See marriage*
  for personal hygiene of syphilitics, 136
  governing miscarriage and abortion due to syphilis, 96
  sexual relations in syphilitics, 138
  variations on, in hereditary syphilis, 96

Saliva, syphilitic germs in, 38
Salvarsan, accidents due to, 78
Salvarsan, action of, in syphilis, 73
  and abortive cure, 73, 79, 89
  and mercury, comparative value of, 68, 89
  in pregnancy, 97
  animal tests on, 71
  arsenic in, 71
  as a social asset, 78
  cheap, vital importance of, 172
  combination of arsenic and dye, 70, 71
  correct administration of, 77
  discovery of, 70
  effect of first dose, 78
  of insufficient treatment with, 76
  on mucous patches, 74
  expense of treatment with, 76
  importance of, in controlling contagiousness of syphilis, 73, 74, 122
  in treatment, 89
  in control of syphilis in prostitutes, 157
  methods of giving, 75
  misconceptions regarding cure by single dose, 72
  need for governmental control, 77
  patent rights on, 172
  preliminary tests of, on man, 71, 72
  price of, 172
  repeated doses, 76
  use of, does not justify relaxation of rules for marriage, 127
  value of, in syphilis, 73
Scandinavian countries, compulsory treatment of venereal disease in, 180

Scandinavian countries, free treatment of venereal diseases in, 169
provision for reporting venereal disease in, 179
Scars following gummatous changes, 46
Schaudinn and Hoffmann, 14, 22
School-hospitals for hereditary syphilis, 108
Secondary stage of syphilis, 35
contagious relapses in, 42
contagiousness in, 110
cure in, 86
eye trouble in, 36
headaches in, 36
loss of weight in, 36
problems of, 42
rash (eruption) in, 36
rheumatic pains in, 36
severe, 36
spontaneous disappearance of symptoms, 39
time required for cure, 88
Secrecy, professional, right of syphilitics, 139
right of syphilitic, in connection with reporting of disease, 178
Self-control. *See sexual self-control*
Self-deception in regard to risk of infection, 161
Self-treatment in syphilis, 140
Semen, Spirochæta pallida in, 39
Sexual characteristics of syphilitic children, 102
morality, development of, 145
relations, abstinence from, economic influences opposing, 158
of syphilitics, rules governing, 129, 138
Sexual relations, transmission of syphilis by, 117
self-control, economic forces opposing, 157
teaching of, 159
transmission of syphilis, question of guilt or innocence, 118
Silverware, transmission of syphilis by, 115
Single dose cure of syphilis with salvarsan, 72
"606." *See salvarsan*
Skin, recurrences of secondary eruption in, 43
unbroken, importance of, in preventing contagiousness of eruptions, 38
Sleeping sickness, 70
Smoker's patches, 138
Smoking (tobacco) in syphilis, 138
Snuffles in hereditary syphilis, 100
Social evil and syphilis, 165. *See also prostitution*
problem of syphilis, 15
Soft ulcer or sore, 16. *See also chancroid*
Soldiers, syphilis and gonorrhea among, in present war, 183
Sore throat in secondary syphilis, 38
Sores, contagious, effect of salvarsan on, 74
in prostitutes, 136
in syphilis, 38
transitory character of, 123
contagiousness of moist, 27, 38, 110
of open, 109
on nipples in wet nurses, 101
primary. *See chancre*
soft, 16. *See also chancroid*

Sores, tertiary. *See syphilis, late, gumma*
Sperk's estimate of frequency of relapse in secondary stage, 125
Spirochæta pallida, 27
average life of, on objects outside body, 113
destruction of, in body, 39
discovery of, 14, 22
distribution of, in internal organs, 39
effect of antiseptics on, 27
of drying on, 27
of salvarsan on, 74
growth of, 27
in brain, in general paralysis of insane, 48
in hereditary syphilitic children, 99
in late syphilis, 45
in lymph-glands, 34
in secondary syphilitic eruptions, 38
in spinal cord, in locomotor ataxia, 49
invasion of body by, in secondary stage, 35
low vitality of, 27
mode of entry into body, 28
sensitizing of body to, 39
strains or type of, 40
variations in behavior of, in different persons, 40
Spleen, Spirochæta pallida in, 39
Stage of syphilis, relation of, to curability, 82
secondary, of syphilis, 35. *See also secondary stage; secondary syphilis; contagiousness; transmission; and Spirochæta pallida*
Stage, tertiary, of syphilis, 45. *See also syphilis, late*
State, encouragement of early marriage by, 159
provision of, for recognition and treatment of syphilis, 168
Stigma attaching to syphilis, harm done by, 143
of syphilis, effect of, on venereal hospitals, 167
Still birth, relation of syphilis to, 96
Still's statistics on death from hereditary syphilis, 98
Stomach in locomotor ataxia, 49
Sweat-glands, absence of Spirochæta pallida in, 39
Sydenham Royal Commission, 164
views on reporting of venereal disease, 179
Symptomatic cure in late syphilis, 87
Symptoms, absence of, in syphilis, 23
constitutional, of secondary syphilis, 36
Syphilis, absence of immunity in, 139
accidental, in physicians and nurses, 116
acquired, in children, 95
in marriage, 119
action of mercury in, 63
of salvarsan in, 74
active, relation of, to miscarriages and abortion, 96
adequate dispensary service for treating, 171
ageing effect of, in child, 99
and civil population, 183
and engagements to marry, 129

Syphilis and marriage, 125
and mental disease, 50
and prostitution, 18, 133
and public prejudice, 141
and sexual problems, 18
and war, 183
as cause of death in children, 98
of miscarriages and abortion in women, 95
as public health problem, 18
as social problem, 15
blood test for, 54
broader outlook concerning, 146
comparison of, with malaria, 62
compulsory treatment of, 180
concealed forms of, 23
concealment of, by gonorrhea, 30
confusion of, with gonorrhea, 13, 16, 31
problem of, with various issues, 16, 17, 165
congenital, 94. *See also syphilis, non-hereditary*
constitutional symptoms of, 36
contagiousness of, in secondary stage, 110
course of, summary, 52
cure of, 90
danger from irresponsible persons infected with, 150
deaths from, 48
definition of, 21
diminishing virulence of, 12
early, methods of recognizing, 32
educational prophylaxis of, 157
epidemic of, in sixteenth century, 11
eruption in secondary stage, 36
essentials of campaign against, 168
false silence in regard to, 15
Syphilis, five-year rule regarding contagiousness, 124, 126, 129
freak legislation in regard to, 166
guilt or innocence in transmission, 118
harm done by stigma attaching to, 143
hereditary, 92
accident and injury in, 105
contagiousness of, 100, 105
destructive changes in, 101, 102
early signs of, in children, 99, 100
late signs of, 101
mental symptoms in, 101
of eye, 103
treatment of, 107
history of, 11
importance of prohibition in controlling, 184
important advances in knowledge of, 17
in adopted children, 106
in British working men, 24
in families, detection of, by Wassermann test, 128
in father or mother of family, 92, 93, 126
in men who have only had gonorrhea, 31
in prostitutes, 134
in United States, estimates of, 26
in wet nurses, 100, 101
inability of physician to prevent marriage of persons with, 131
incomplete cure of, 82
influence of, on progress of mediæval medicine, 13
innocent, in fiancée, 129
suffering of, caused by, 19

Syphilis, late, attributable to insufficient salvarsan treatment, 73
curability of, 86
destructive effect of, 47
in nervous system, 48
most serious forms of, 47
seriousness of, 45
tissue changes in (gumma), 46
measure to prevent spread of, from army to general population, 183
medical examination for, as means of detecting contagiousness, 123
of prostitutes for, 135
mental attitudes in relation to, 141
Metchnikoff prophylaxis of, 162
mild, dangers of, 41
relation to complications in nervous system, 45
mistaken conceptions of, 13
moral prophylaxis of, 156
morbid fear of, 154
non-genital, 28
or extra-genital, 119
obstacles to control of contagiousness of, 123
to social control of, 141
passive, transmission of, by prostitutes, 135
personal hygiene of, 136
prevalence of, 23
in lax individuals, 133
prevention of, by sexual self-control, 159
public attitude toward, 141
quacks and self-treatment in, 140
radical or complete cure, 80
Syphilis, reinfection with, 139
relation of mouth and tongue cancers to, 138
reporting of, to health officer, 178
risk of acquiring, from prostitutes, 136
of infecting wife with, 125
secondary, cure of, 86
time required for cure of, 86
sexual transmission of, 117
stages of, 26
state provision for treatment of, in Denmark, Norway, Italy, England, Germany, West Australia, 168, 169
tertiary, 45
transmission and hygiene of, 109
by kissing, 116
to and by wet nurse, 100, 101
treatment of, 60
at Hot Springs, 140
with salvarsan, 75
unnoticed manifestations of, 41
variations in course of, in different persons, 41
Wassermann test for, 54
world movement against, 164
Syphilitic, average type of, 148
child, nursing of, by mother, 101
ideal conscientious type of, 147
irresponsible types of, 151
morbid mental states, 153
personal hygiene of, 136
should tell physician he has disease, 140
rule governing care of personal articles used by, 139
rules governing kissing in, 138
sexual relations in, 138

Syphilitic, well-regulated life for, 137
Syphilophobia, 153

Tabes dorsalis, 48. *See also locomotor ataxia*
Taboparesis, 50
Teeth, effect of mercury on, 63, 67 (Hutchinson's), in hereditary syphilis, 102
Tertiary stage, 45
Test for syphilis in blood, 54. *See also Wassermann test*
Noguchi, luetin, 79
Throat, contagious sores in, 38
Time treatment principle in relation to marriage, 124, 126, 129
Tobacco, effect of, in syphilis, 43, 112, 138
Toilet seats not means of transmitting syphilis, 114
transmission of gonorrhea by, 114
Tongue and tonsils, contagious sores on, 42
cancer of, following contagious mucous patches, 138
Towels, transmission of syphilis by, 113, 115
Transmission of syphilis by dishes, etc., effect of washing and disinfection on, 114
by infected articles, 113
by kissing, 116
by sexual contact, 117
effect of treatment on risk of, 124
from father to mother, 93
from mother to child, 92
increased risk of, in tobacco users, 138
Transmission of syphilis, medical examination in prevention of, 123
not by door-knobs, bath-tubs, or toilet seats, 114
passive, by prostitutes, 135
personal responsibility in, 124
to wife, 125
under conditions of crowding and bad sanitation, 115
of everyday life, 114
unlikely in marriage of hereditary syphilitics, 105
Treatment, intraspinal, in syphilis of nervous system, 79
lack of effect of, on deafness in hereditary syphilis, 104
obstacles to control of contagiousness of syphilis, 123
of chancre may prevent recognition, 32
of syphilis, 60
advertising in regard to, 176
backwardness of this country in public provision for, 170
by drug clerks, 175
by quacks, 140
compulsory, 180
control of contagiousness, 122, 124, 126
dispensary service necessary for, 171
efficient, 88
expense of, 76, 173
expert advice in, 174
hospitals in, 171
importance of salvarsan in, 89
in pay-patient clinics and hospitals, 173
necessity for cheap salvarsan in, 172

Treatment of syphilis, various state provisions for, 168, 169
Wassermann test in, 57
with salvarsan and mercury combined, 89
specific methods of, 60
Troops, syphilis and gonorrhea in, 182

United States. *See America*

Vedder's estimate of prevalence of syphilis, 25
Venereal disease, 16
and marriage, annulment of, 132
effect of universal military service on, 184
European and American provision in regard to care of, 169, 170
importance of national prohibition in controlling, 184
proposed military measures in connection with, 183
relation of war to spread of, 182
world-wide movement against, 164
hospitals and freak legislation, 167
Vermont, reporting of syphilis in, 178
Vice Commission, Baltimore, syphilis in prostitutes, 134
Virulence of syphilis in 15th and 16th centuries, 12
Vomiting in locomotor ataxia, 49

War, control of venereal diseases during, 183, 184
War, relation of, to spread of venereal disease, 182
Warts, contagious syphilitic, 42
Washing, effect of, on transmission of syphilis by dishes, 114
Wassermann test, 54
as evidence of fitness to marry, 130
difficulties of, 55
effect of mercury on, 67
of treatment on, 58
factor of error in, 56
importance of expert performance of, 174
to pregnant mother, 97
in connection with adoption of children, 106
in determining cure of syphilis, 58, 90
in family where one member is syphilitic, 128
in freak legislation, 167
in late hereditary syphilis, 106
in syphilitic mothers, 93
negative, development of infectious sores in spite of, 123
meaning of, 56
on spinal fluid, 59
persistently positive, 58
positive, meaning of, 56
practical details concerning, 59
provocative, 130
use of, in recognizing early syphilis, 33
Weight, loss of, in secondary recurrences, 43
in secondary syphilis, 36
Welander homes for hereditary syphilis, 108

West Australia, action of, against drug stores prescribing for syphilis, 176
attitude of, on personal Metchnikoff prophylaxis, 177
compulsory treatment of syphilis in, 180
state provision of, for treatment of venereal diseases, 170
Wet nurses, syphilis in, 100
Wife, importance of cure for, 128
infection of, by husband during pregnancy, 94
Wife, risk of infecting, 125
Williams, syphilis and mental diseases, statistics on, 50
Womb, chancre on neck of, 30
Women, child-bearing, effect of syphilis on, 95
employment of, in connection with problem of controlling venereal disease in war times, 184
miscarriages and abortions in, due to syphilis, 95
syphilis in lax, 133
Worry and anxiety, effect of, on syphilitic, 137

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